Volume XXXII.
Number 6

MARCH, 1907.

$2.00 per year.
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TEXTILE WORLD RECORD

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17 EXCHANGE PLACE, PROVIDENCE, R. I.

Singeing Machines,

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Washers, Squeezers,

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Continuous Chainless

Steamer,

Aniline Agers,

Dyeing Machines,

Open Soapers,

Blanket Washers,

Color Kettles,

Horizontal or Vertical Drying Machines, with Copper or Tinned Iron Cylinders,

Automatic Tentering Machines,

Water and Starch Mangles,

Dampening Machines,

Dyeing Machines for Chain Warps.

BUILDERS OF ALL KINDS OF

MACHINERY

FOR

BLEACHING
DYEING
DRYING

AND

FINISHING

Calenders for Rolling, Glazing, Chasing and Embossing, also Calenders for Moire Finish.

Sole Manufacturers of Patented Flexible Cloth Expander for Cylinder Drying Machines, Calenders, Mangles, &c.

Patent Combination Rolls Made of Cotton and Husk, especially adapted for Soft Finish, Unequalled for Elasticity and Durability.

Cotton, Paper, Husk, Chilled Iron, Brass and Rubber Rolls, Electro-deposited Copper Rolls for all Purposes.

Padding and Drying Machines for Shade Cloths.

Single and Double Cylinder Engines.

Hydraulic Presses and Pumps.

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ALL KINDS OF OUTFITS FOR BLEACHING THREAD AND SOFT TWISTED YARN.
BLEACHING MACHINERY FOR YARNS IN THE WARP OR CHAIN.

Estimates, Drawings and full particulars of complete plants furnished on application.

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Calender and Mangle Rolls

COTTON

PAPER (LINEN, COTTON OR MANILLA)

FELT PAPER

COMBINATION (COTTON AND HUSK)

COMBINATION (COTTON AND EXCELSIOR)
PATENTED

HUSK

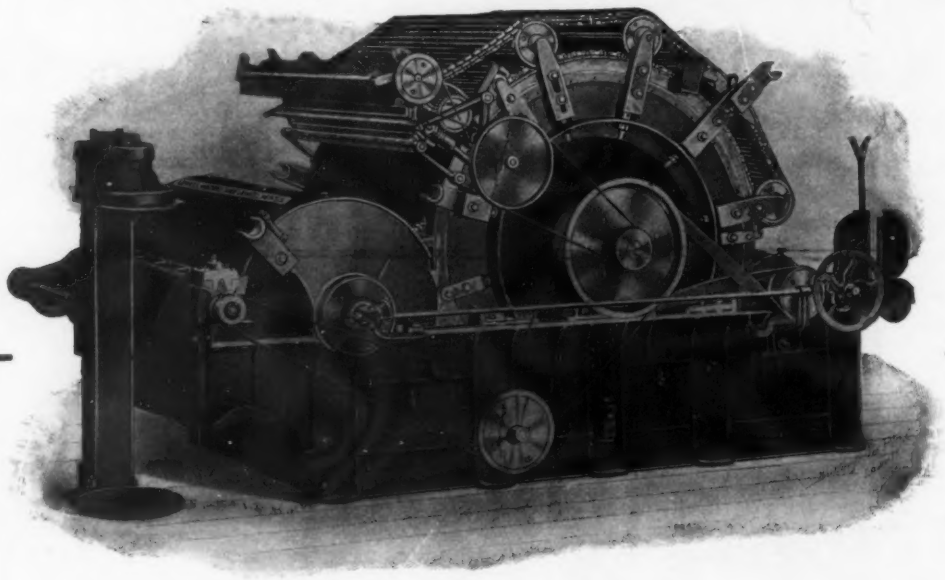
FIBRE

BRASS CHILLED IRON RUBBER

H. W. BUTTERWORTH & SONS CO.

PHILADELPHIA, PA.

BLEACHING, DYEING, DRYING AND FINISHING MACHINERY FOR SILK, COTTON AND WORSTED FABRICS.



Cotton and Worsted Machinery

With Modifications to Suit Any Class of Work.

Cotton Machinery: Cards, Railway Heads, Drawing Frames, Fly Frames, Speeders, Ring Spinning Frames, Twisters, Spoolers, Reels, Warpers, Slashers, Winders, Looms, Shearing Machines, Balling Machines, Folders, Stamping Machines, Sewing Machines, Size Pumps, Size Kettles, Drawing-in Frames, Baling Presses, Indigo Grinders.

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Plans, Specifications and Estimates furnished upon application.

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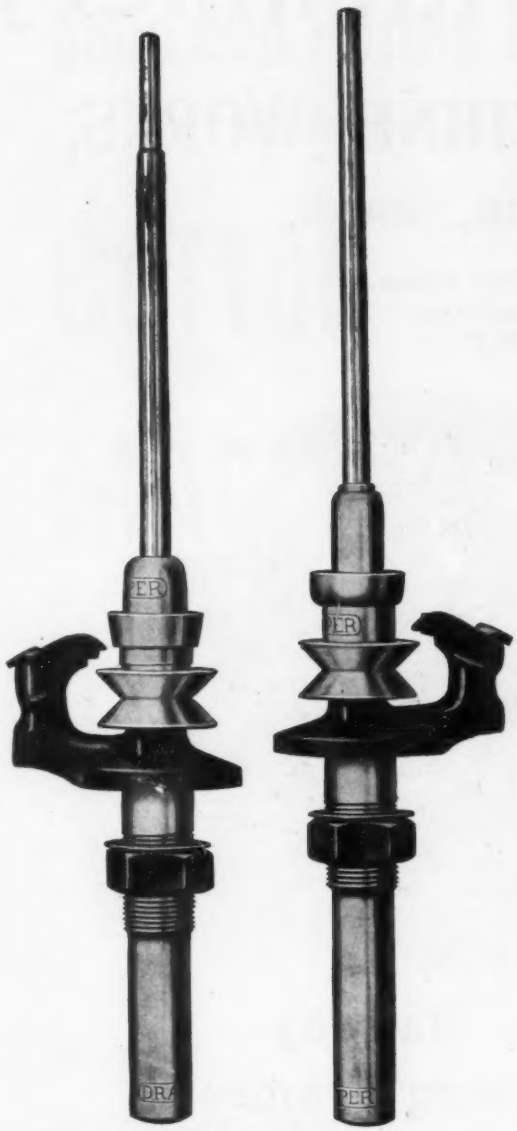

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Large Size
Spinning Spindles.

We make

Draper,
Whitin,
McMullan

and other
types of

Spindles;

also

Northrop Looms,

Twisters,
Warpers,
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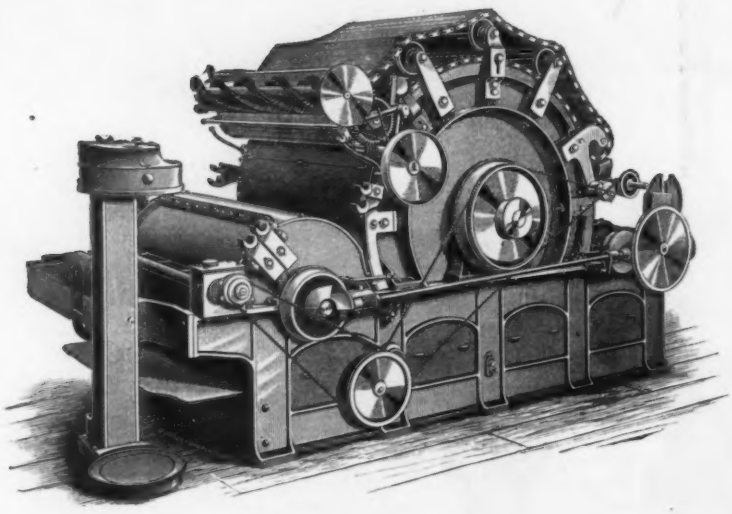

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Plain and Fancy Silk Looms

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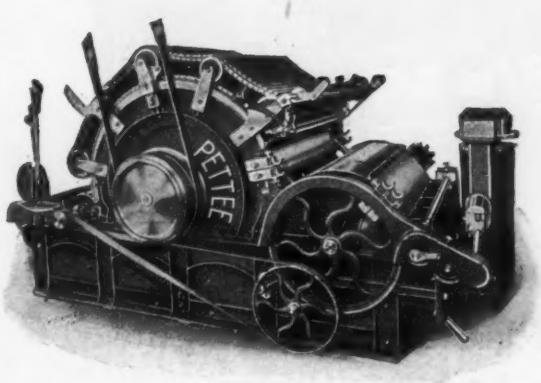

Pickers,
Revolving
Flat Cards,
Drawing
Frames,
Railway Heads,
Slubbing,
Intermediate
and
Roving
Frames,
Spinning Frames,
Spoolers
and
Reels.

Shops—

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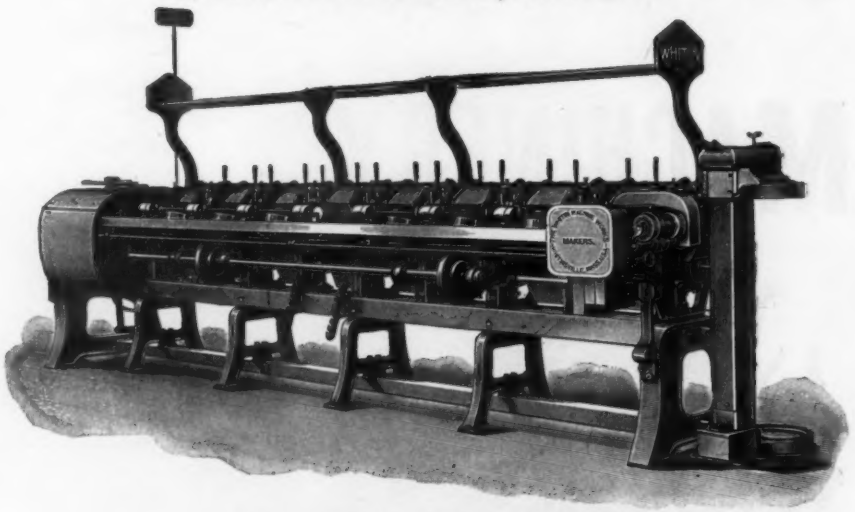

HIGH SPEED COMBER 1906 MODEL.

Revolving Flat Carding Engines,
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Ribbon Lap Machines, Combers,
Railway Heads, Drawing Frames,
Spinning Frames, Spoolers, Twisters,
Long Chain Quilling Machines, Reels, Looms.

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Blowing Systems

For Conveying Bale Cotton
from Storehouse to Picker-room

Self-Feeding Openers
Lappers and
Cleaning Trunks

Waste-Working Machinery

Raw Stock Cotton Dryers

We own the Patterns and can furnish REPAIR PARTS for PICKERS
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Rib Knitting Machinery for Underwear and Hosiery

Plain, Single Lever or with Welt, Slack Course and Automatic Slackening Device for Welt.

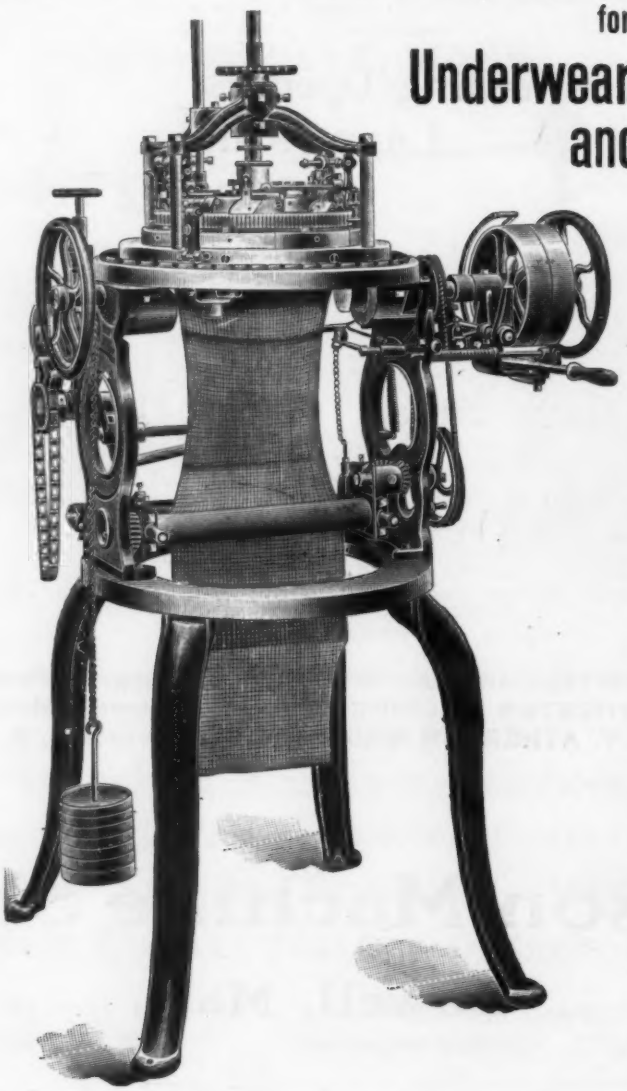
Improved Measuring Device, by actual length knit.

Sizes 8 to 24 inches, inclusive, varying by one inch.

Number of Feeds, 4 to 12, according to style and diameter of machine.

Solid Forged Steel Cylinders, specially hardened or with patent inserted walls for fine fabric.

Special Machinery for Sweaters, etc.



The illustration shows our

Improved High Speed Single Lever Automatic Ribbed Underwear Machine

for making ladies' and gents' ribbed underwear, union suits, etc., plain and shaped.

We build Loopers, Ribbers and other Machinery for Knitting Mills

As well as

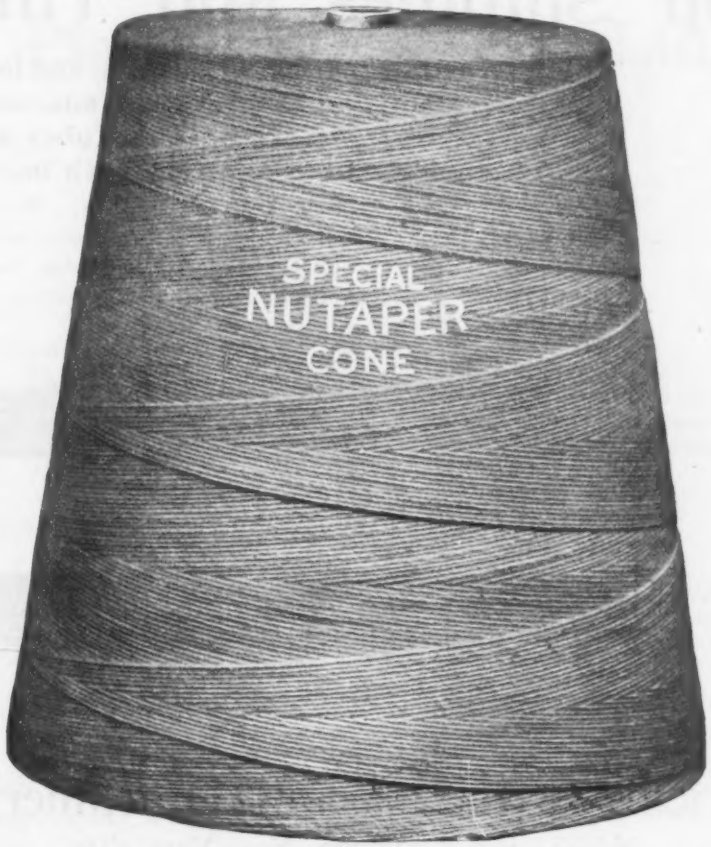
A Complete Line of Full Automatic and 7-8 Automatic Seamless Hosiery Machinery.

Scarcity of Labor

places mills operating

Universal Winding Machines

at an advantage: their production per operator being unequalled by any other winder.



High speed machines for all classes of winding made with interchangeable parts throughout.

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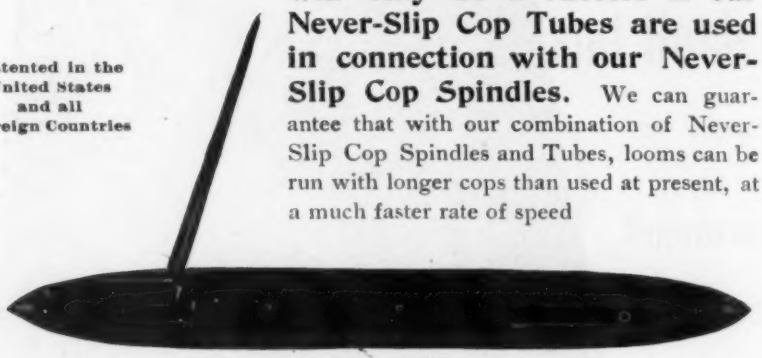
Shuttles for all Textile purposes and Sundry Special Loom devices

Never=Slip Cop Spindles and Tubes

Never-Slip Cop Tube
Patent applied for

Patented in the United States and all Foreign Countries

Filling-Waste is reduced to nothing and long Cops will only be a success if our Never-Slip Cop Tubes are used in connection with our Never-Slip Cop Spindles. We can guarantee that with our combination of Never-Slip Cop Spindles and Tubes, looms can be run with longer cops than used at present, at a much faster rate of speed



Shuttle with Spindle Raised
U. S. Patents: 778851, Jan. 3, 1905; 790611, May 23, 1905; other patents pending

Shuttle with Spindle Lowered.
U. S. Patents: 778851, Jan. 3, 1905; 79611, May 23, 1905; other patents pending

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NEAR MOTT AVENUE SUBWAY STATION

Electric and Automatic
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Simplicity! ***Perfection!***

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BY FAR THE LARGEST MAKERS IN THE WORLD OF

Cotton, Woolen and Worsted Machinery

Platt's Patent Opening and Picking Machinery.
Platt's Cotton Comber will comb from 7-8" stock to Sea Islands.
Platt's Special Machinery for Making Cotton Waste into Yarns.
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Platt's Woolen and Worsted Carding Engines, Special Designs.
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Flax, Hemp and Jute Machinery.

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Looms for Worsteds, etc.

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Patent Feeding Machines for wool, cotton, flax, fur and fibrous material.

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Card Clothing for Cotton.

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Grinding Machinery and Emery Filleting. The Best French and English Combing and Rubbing Aprons. Harding's Pins and Circles. Varey's Fallers, etc.

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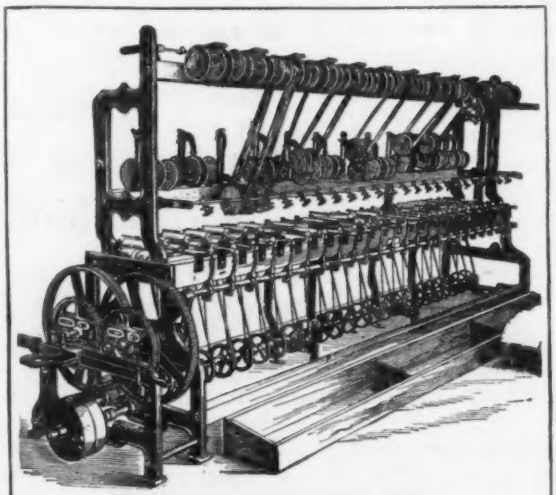
Able to supply the best

Cop Winding Machinery

Or Hosiery Winders and more in particular

Bobbin Winders,

Keep in mind that I



The Greatest Bobbin Winder for Skeins Ever Built.

Always produce machines that are right

Letting nothing go out

That is not satisfactory before delivery.

Every

Manufacturer should investigate warping and beaming machinery, warp splitting as well,

Upright Spoolers, Quillers, Warpers, Twisters, etc.

Send for full information and prices.

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Water Towers

Are furnished by

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They provide a storage for water under pressure, and are valuable for fire protection and personal uses

The T. & W. Towers do not fall or leak.

All Sizes Built

Plans and prices given on application.

Address

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Two good textile devices

The Schaellibaum Grid.
The Grid with a Comb.

Combs the cotton in the lapper, extracts more dirt with less waste and produces an evener lap than any other.

Where utmost cleaning is desired, we waste less than ⅛ of 1% in lapping room—otherwise none at all. Takes work off the cards. Gives greater production. Thirty days free trial.

Patent Collar Board or Bolster for Woolen and Cotton Mule Spindles

Simple but a revolution.
Only requires re-lubricating once a year.

The spindles run in a lubricant all the time, doing away with the old time continuous oiling.

There is no splashing of oil—no escape. Less friction. Better working in every way.

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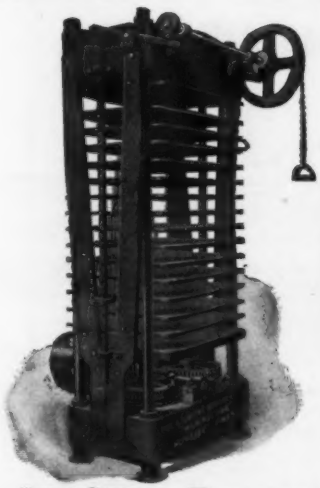

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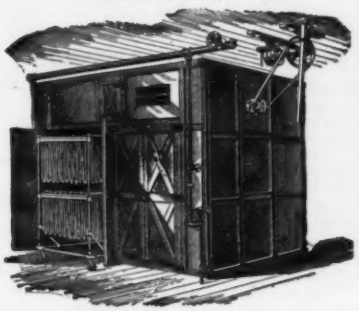
For Wool, Cotton Stock, Yarn, Stockings, Underwear, Etc.



Truck Yarn Dryer.

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"Hurricane" Fan, Style No. 2. Write for Catalogues.

COMPLETE EQUIPMENTS FOR DYEING, SCOURING, BLEACHING, CARBONIZING, OXIDIZING, CHROMING, Etc.

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to lace a belt if you want to do it quickly, cheaply and thoroughly.

The

Jackson Belt Lacer

will lace a 5" belt in less than three minutes at a cost of less than one cent, and the work will be faultless! Furthermore, the Jackson way permits a belt to be taken apart and shortened or lengthened, just as you wish, in a few seconds. And the lacing is unusually tough, 1900 tensile strain has failed to break or pull it apart. Yet so compact is the stitch that it passes over the smallest pulley without noise, slipping or friction.
Write to-day for free belt lacing proposition.

Birdsboro Steel Foundry & Machine Co.

Birdsboro, Pennsylvania.

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Increases Production, Improves Quality, Decreases Labor Cost.

THE BRAMWELL SELF-WEIGHING FEEDER,

For Woolen, Worsted, Hosiery and Shoddy Cards and Garnett Machines.

We began introducing this feeder more than twenty years ago and its use is now practically universal. Many other types and makes have been tried and discarded, but the Bramwell, in its improved and up to date form, is now recognized everywhere as the most perfect feeder and only complete feeding machine in the world.

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We have made a careful study of all phases of the feeding problem and by adaptations and modifications of the Bramwell Feeder to meet the particular conditions, are prepared to feed evenly all kinds of stock from rabbit's fur to jute tow, including shoddy, cotton, fine wool, mixtures, fine and coarse worsted, flax tow, long worsted and all other kinds of stock.

THE APPERLY FEEDER,

For Second Breaker and Finisher Cards.

This machine was originally brought to this country and introduced against great opposition by the founder of this concern, the late Geo. S. Harwood. Today there are about 15,000 machines of our construction running in this country and Canada. We have greatly improved the machine. It is today an efficient, positive and up-to-date feed, and we can offer manufacturers the choice between the KEMP POSITIVE GEARED TRAVELER and the STANDARD TRAVELER with all other recent improvements.

THE BRAMWELL PICKER FEED,

For Burr Pickers, Mixing Pickers, Fearnaughts and Lumpers.

We consider our improvements in picker rooms of the utmost importance for up-to-date manufacturers. In fact, wide awake manufacturers are more and more realizing the wisdom of bringing their stock to the card room in a better state of preparation. Hand feeding is becoming a thing of the past in the picker room as in the card room. The latest Bramwell Picker Feed is built to handle all kinds of stock in any quantity with evenness and without injury to the staple.

THE SPENCER AUTOMATIC STOCK OILING MACHINE.

This is a modern device for oiling the stock automatically on its way to the picker from the BRAMWELL PICKER FEED, superseding the wasteful, dirty method heretofore in use. Because of the accuracy of this method and the fac. that the oil goes on the stock only (instead of the floor and walls) there is a large saving of oil, and the stock is at the same time more evenly oiled and much better prepared for the carding process.

THE MODERN BRAMWELL FEED FOR WOOL WASHERS AND WOOL DRYERS.

The scouring and drying of stock is today recognized as a very important part of the manufacture of textiles, especially in worsted mills. Our feeds are recognized as the standard for properly feeding stock in the grease or wet stock with absolutely no injury to the staple, with evenness and in sufficient quantity and in the best possible condition for economical scouring. There have been other feeds offered for this class of work, but after clogging up and giving all kinds of trouble most of them are today in the scrap heap, having been replaced with our feeders.

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We have not been standing still all these years and the feeders we are building today are modern and up-to-date but these improvements and attachments can be placed on older feeders of our construction, greatly to their benefit. We do not hesitate to claim that **no outlay will show a greater return** to a manufacturer than money spent in bringing your Bramwell and Apperly Feeds thoroughly up-to-date.

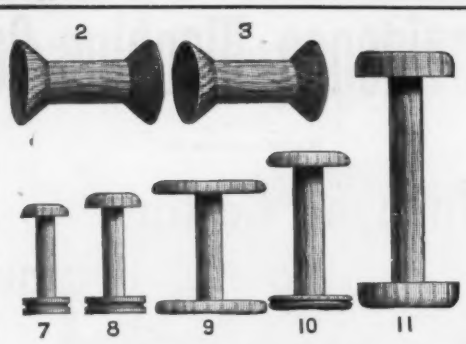
APRONS OF ALL KINDS FOR BRAMWELL FEEDERS.

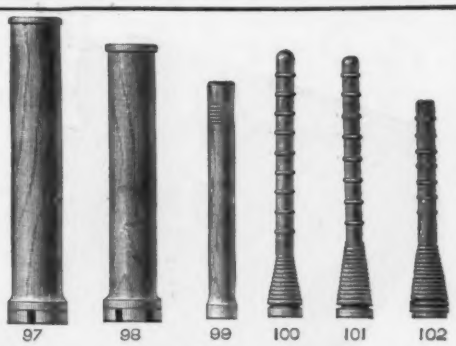
We build about thirty different styles of spike aprons adapted to the various kinds of stock BRAMWELL FEEDERS are called upon to handle. Our policy is and will be to put into our aprons the best materials and workmanship money can buy. We know we could make cheaper aprons by using cheaper materials and less expensive labor and it would take manufacturers some years to find us out. The apron would LOOK nearly as well but would WEAR only two or three years, instead of from five to ten or twelve. Do not trust the man who says he can sell you aprons cheaper than we can. He can do it (and so could we) but you pay the bill in the end. The best is none too good and is the cheapest in the long run.

Call on us for particulars and information about all matters relating to Feeding Machinery.

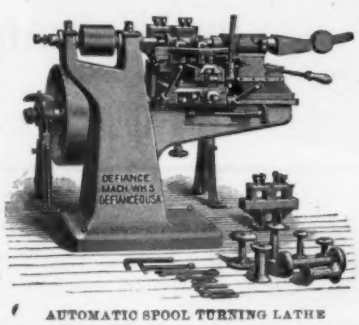
GEO. S. HARWOOD & SON,

53 STATE ST., BOSTON, MASS.





SPOOL AND BOBBIN MACHINERY



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Complete Equipment
OF THE
MOST MODERN TOOLS
25% SAVED
Over the Old Methods
Send for Catalogue and Particulars to
THE
Defiance Machine Works,
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AUTOMATIC BOBBIN LATHE

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MAKERS OF MACHINERY FOR

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Flax, Hemp, Tow and Jute

Special Machinery

for the Manufacture of

Twines, Rope Yarns and Binder Twine

Good's Combined Hackling and Spreading Machine.

Long Reach Screw-Gill Drawing Frames. Chain-Gill Drawing Frames with Apron Heads.

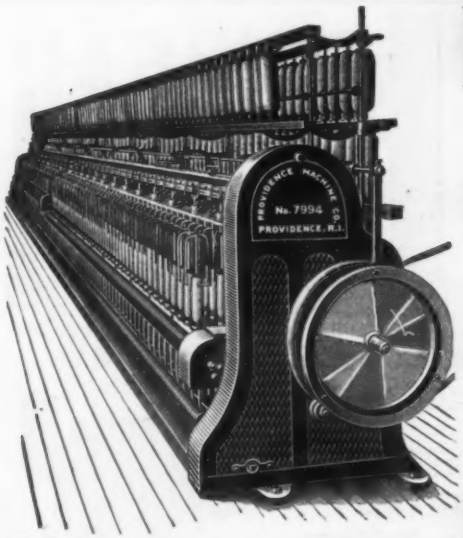
Patent High-Speed Horizontal and Automatic Spinning Frames for Manila.

Improved Laying Machines.

Haskell-Dawes Tubing Twisters.

Brownell's Patent Twisting and Laying Machines for Twine.

Complete Plans and Estimates for Flax, Tow, Hemp and Jute Mills, Trawl Twine Factories and Steam Ropeworks.



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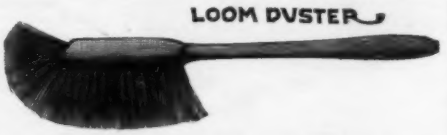
Manufacturers of

Improved Cotton Roving Frames

Improved Worsted Roving Frames

564 Eddy St., - - PROVIDENCE, R. I.

An Essential to the Weave Room



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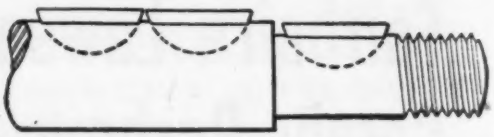
S. A. FELTON & SON CO. MANCHESTER, N.H. The Loom Duster

Key Seating Attachment FOR Whiton Gear Cutter



We offer an attachment for use with our Gear Cutting Machine, to cut key seats for the Woodruff System of Keying. Write for description, circulars and price.

THE D. E. WHITON MACHINE CO.,
19 Oak Street, New London, Conn.

THE L. M. BOWES COMPANY,

Every Description of Fine Leather for Textile Use.

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MAKERS OF HIGH GRADE

CARD CLOTHING

For Cotton, Woolen, Worsted and Silk.

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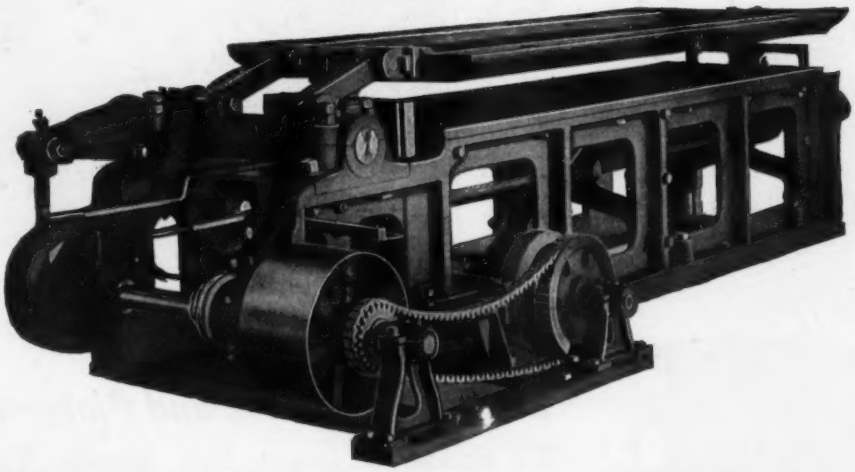

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Chilled and Soft Iron Rolls. Heavy Transmission Machinery.
Machine Moulded and Machine Cut Gearing, to 20 ft. diameter, Etc., Etc.
Heavy Castings, in Gray Iron or Semi Steel.

CHARLES S. BARTON, Pres. and Treas.
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Established 1837.
Incorporated 1867.

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Printing Machines

From ONE to FOURTEEN COLORS,
for ALL KINDS OF FABRICS.

ALSO

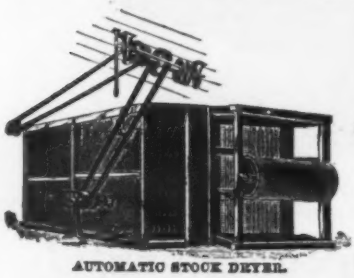
Duplex Printing Machines, Color Kettles,
Forcing Machines, Copper Printing Rollers,
Winders for Greys, etc.

WORCESTER, MASS., U. S. A.

"20th CENTURY" MACHINERY

Dryers for Wool and Cotton Stock, Yarn, Stockings and Underwear. Carbonizers, Ventilating Fans, Yarn and Wool Scouring Machines, Cloth Washing and Dyeing Machines, Tom Toms, Chroming Oxidizing Machines.

WEB FEED.



AUTOMATIC STOCK DRYER.

We also manufacture Kershaw's Geared Traveler and Improved Web Feed.

Garnett Machines and Pickers.

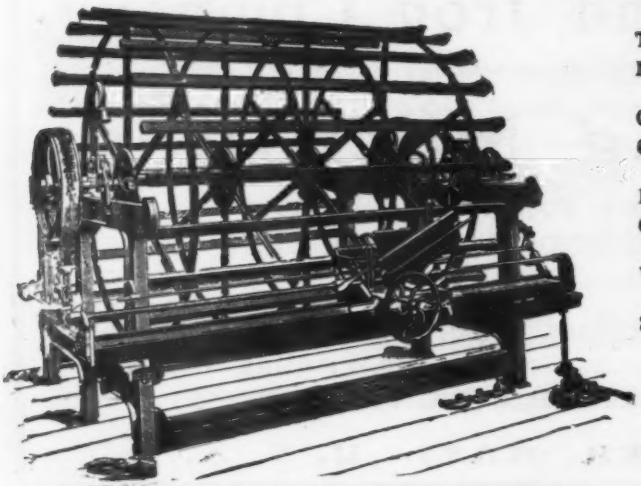
We Recloth or furnish New Metallic Toothed Cylinders and Feed Rolls.

AMERICAN DRYING MACHINERY CO.,
19th and Westmorland Sts., Philadelphia, Pa.

Telegraphic Address: "WHITELEY, HUDDERSFIELD." Nat. Telephone, 598 and 599.

Wm Whiteley & Sons Ltd.

LOCKWOOD, HUDDERSFIELD.



WARPING MILL WITH PATENT SECTION DIVIDER.

Makers of all descriptions of Tentering and Drying Machines.

Moore & Whiteley's Patent Wool and Cotton Dryer.

Crabbing or Winding-on Frames.

Cross Raising Machines, Wool Scouring Machines,

Hydro Extractors. Warp Sizing.

Cool Air Drying and Beaming Machines.

Warping Mills with Patent Sectional Dividing Apparatus.

Self-Acting Mules. Bobbin or Pirn Winder, &c., &c.

Mercerizing Machinery.

Second-hand Tentering Machines in good repair at low prices.

Exhaust Fans

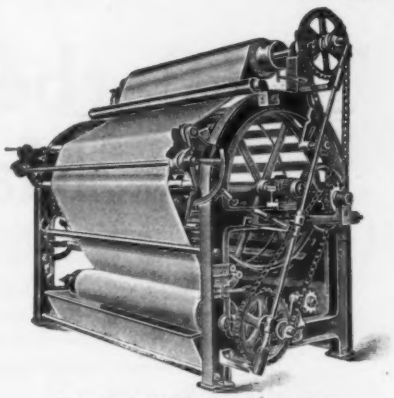
Crocker-Wheeler 36-in. Vertical Fan Outfit. See Bulletin 54-Y.

FOR VENTILATING AND FOR REMOVING STEAM FROM THE DYE HOUSE.

Crocker-Wheeler Company,

Ampere, N. J.

Teasel Gigs



Two Contact Up and Down Gig

Send for photograph of our

New Two Cylinder Gig

The Best Yet

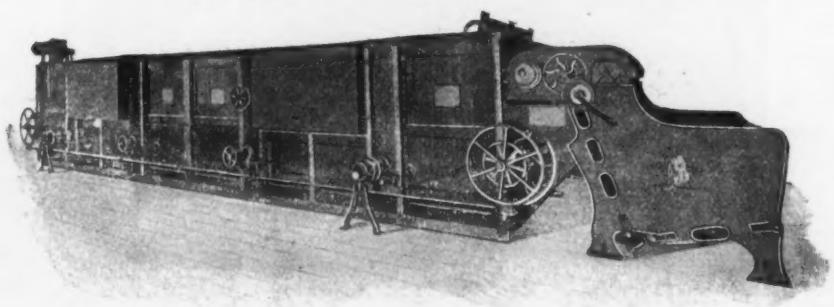
PARKS & WOOLSON MACHINE CO

Springfield Vermont

C. G. SARGENT'S SONS

CORPORATION

GRANITEVILLE, MASS.



. . . BUILDERS OF . . .

Stock Dryers, Wool Washers,

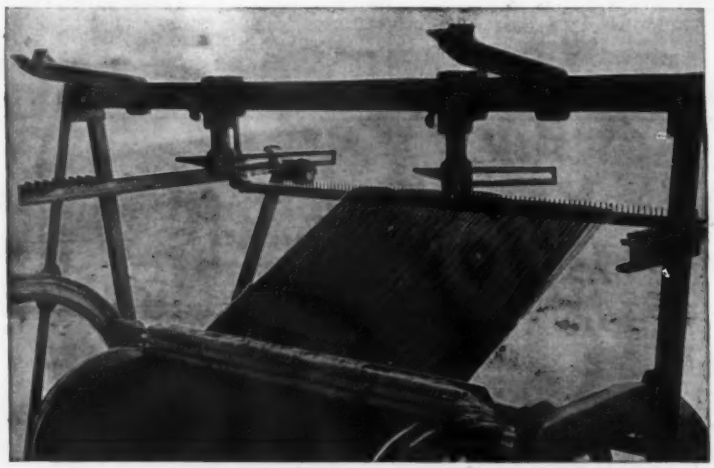
Wool Dusters, Carbonizing Plants,

Burr Pickers, Etc.

B V C
TRADE MARK

The Barber Warp Tying Machine

revolutionizes the work of warp drawing-in, eliminates the many troubles that have been incident to this part of textile production for so many years and puts it on a profit-producing basis by keeping the looms well supplied with warps. The kind, number or condition of the harnesses matters not—the only difference is the saving made which in the case of stop-motion drop wires is sometimes increased as much as 50 per cent. Think of the increased production and lessened cost that are effected by a machine that ties 10,000 perfect knots hour by hour.



Note the row of perfectly tied and trimmed knots.

Think again of what it means in betterment of product to have every knot tied in the perfect way shown above. Surely a machine that accomplishes such worth—while things should have a place in *your mill*. Investigate it *personally*. Machine in operation at our salesroom.

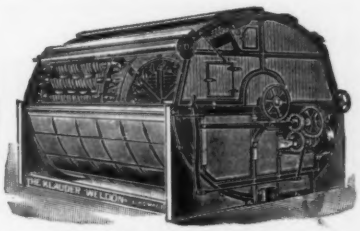
Should be seen by every textile manufacturer.

Barber-Colman Company,

77 Washington St., (North) Boston.

RAW WOOL AND COTTON MACHINE.

MACHINES
sold on
2 MONTHS' TRIAL
YOU
TAKE
NO
RISK

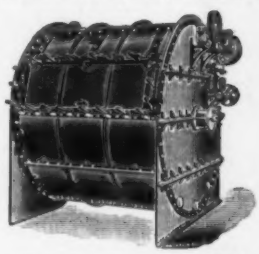


SKEIN AND SLUBBING MACHINE.

THE KLAUDER-WELDON DYEING MACHINE COMPANY

P. O. Box K, AMSTERDAM, N. Y.

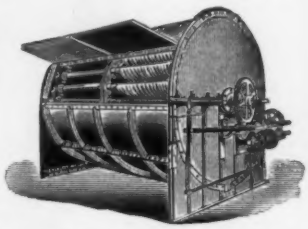
Machines for Dyeing, Bleaching and Scouring Woolen, Worsted, Cotton and Silk Skeins—Slubbing—Raw Cotton and Wool, Waste, Rags, Shoddy, Hosiery, Underwear, Hats, Caps, Knit Cloth, Tapes, etc.



SULPHUR HOSIERY MACHINE.

Special Machines for Sulphur Colors

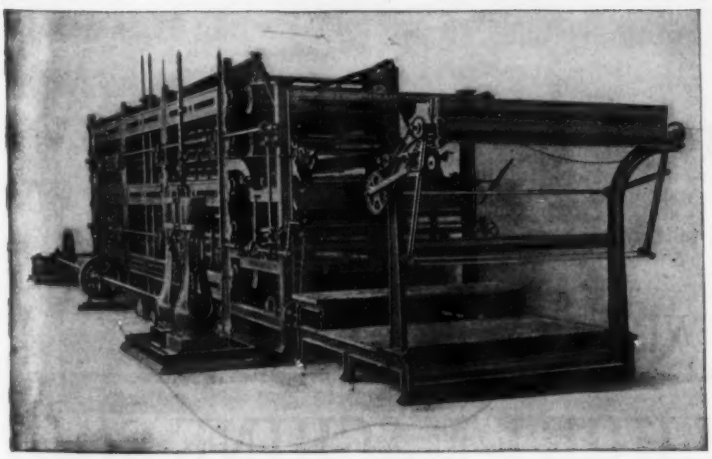
WILL EARN THEIR COST IN
LABOR ALONE
IN FROM
6 TO 12 MONTHS
ACCORDING TO CAPACITY



SULPHUR SKEIN MACHINE.

TENTERING AND DRYING MACHINES

WITH LOW DOWN FEED. **PATENTED FEBRUARY 26, 1895.**



Tentering and Drying Machines on Pipe System. Special Dryers for Heavy Felt Goods. Hot Air Drying and Tentering Machines.

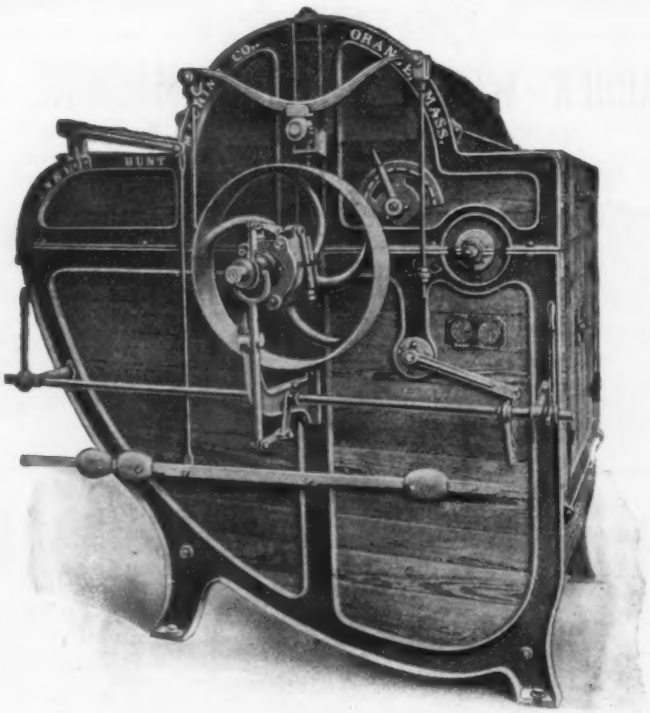
Fulling Mills, Washers, Chinchilla and Whitney Machines, Whipping Machines, Cone Willows, Marsden & Blamire Lap Feed, Dyeing Machines for Piece Goods, Soaping Machines, Wringing Machines, Jigs (Double or Single), Dewing Machines, etc. Crabbing Machines for worsted. Made either single, double or triple.

MANUFACTURED BY

D. R. KENYON & SON, Raritan, N. J. Successors to KENYON BROS.

Long Distance Telephone—Somerville 21.

Rodney Hunt
MACHINE CO.
ORANGE MASS.



RODNEY HUNT-TYPE SH-FULLING MILL

Less cost to operate—by—more efficient design
Less first cost—by—more modern production
Less repairs—by—superior construction
Special Circular No. 301 tells why it has MORE CAPACITY and gives BETTER RESULTS
SOLD ON TRIAL
It will pay to investigate our

TEXTILE WET FINISHING MACHINERY

RODNEY HUNT MACHINE CO.

Branch Office: 70 Kilby St., Boston. - Main Office and Works: Orange, Mass.

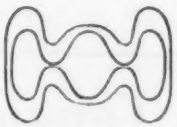
JAMES HUNTER MACHINE CO.

NORTH ADAMS, MASS., U. S. A.

Wool Washers *Bulletin 54*

The Hunter WOOL WASHER

MODEL D



The culminative result of our whole experience in Wool Washer Construction.

Built on the standard lines of tried practice.

Absolutely nothing experimental about it.

Simply a combination of value proved features arranged to meet modern requirements.

Our aim has been to make the best and most complete Wool Washer built.

We have succeeded.

It embodies every desirable feature.

Bulletin 54 describes it.

WILSON & CO., BARNSLEY, Limited

Absolutely secure combination of Shield and Bobbin guaranteed.

Loose Shields Impossible.

BARNSLEY, ENGLAND.

Specialties: PATENT "LOCKFAST" and "CLIMAX" Shields. ENAMELLED CONDITIONING BOBBINS, Impervious to Steam, Moisture or Oil.

TRADE MARK.

GOLD MEDAL St. Louis, 1904. DIPLOMA d'Honneur Liege, 1905. Highest Awards for Bobbins.

Added Strength and Absolute Security.

Samples and Prices on Application.

SPEED & STEPHENSON, Agents for U. S., 170 Summer St., Boston, Mass.

FOSTER SUPERHEATERS

Greatly increase capacity and permanent efficiency of steam turbines.

Power Specialty Company,

BOSTON: 10 Post Office Square. **NEW YORK: 111 Broadway**

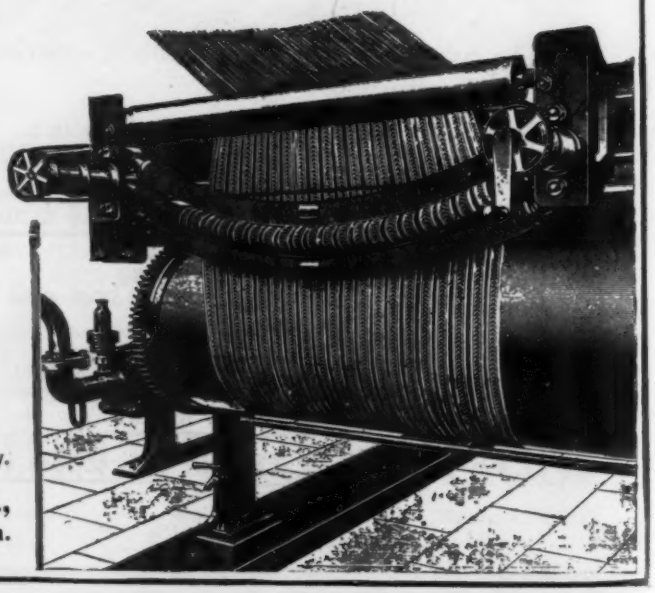
Perfectly Even Tension Both Ways

THIS ideal cloth expander gets the full width of the goods in a most satisfactory way. Can be attached to calenders or cans. Hundreds in use in Great Britain and on the Continent—hundreds more in the United States, with constant satisfaction.

Manufacturers unsolicited say to us, "You have the greatest thing in a spreader ever brought to our attention."

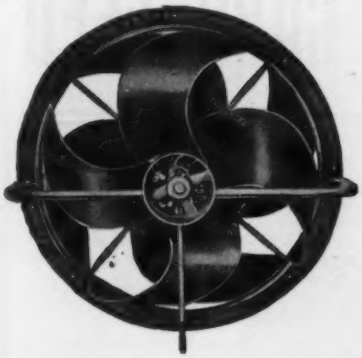
We put them in on trial.
Test it on your own work—'t will pay.

Thomas Leyland & Co.,
60 India St., - - - Boston.



COMPOUND—THAT'S WHY

Barney Compound Ventilating Fans Ventilate, Purify, and Dry.



Notice the compound feature—it does the work. They force out all atmosperic impurities and draw in pure air. They often double capacity of drying rooms, expel loose steam from dye houses—preventing condensation, *cool spinning rooms.*

The Barney System is the most economical.

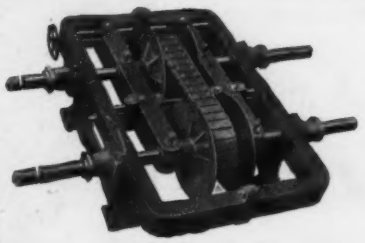
TELL US YOUR PROBLEM.
WRITE TODAY. FREE TRIAL OF FAN.

BARNEY VENTILATING FAN WORKS, 24-28 Binford St., Boston, Mass.

The Reeves Variable Speed Transmission

is in use on almost every kind of a machine where variable speed is desired but is especially valuable in textile mills where speed control is such an important factor in obtaining the best results. Many representative mills are using the "Reeves" with great satisfaction as it fully meets every requirement in the way of just-right speed for tentering machines, drying cans, dyeing machines, carbonizing machines, etc. Investigate—it means a better product and more of it.

Over five hundred in daily operation on textile machinery alone

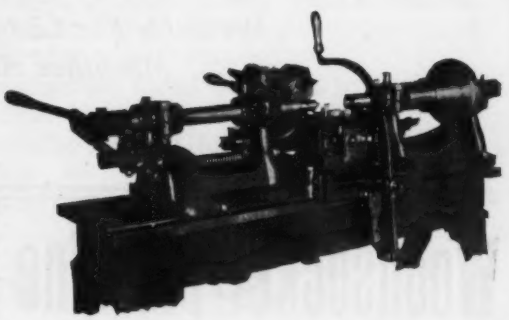


Reeves Pulley Company, Columbus, Ind.

ELLIOTT F. ALDRICH,
Special New England Representative.
Room 621 Industrial Trust Building.
Providence, R. I. Tel. No. Union 3886-L

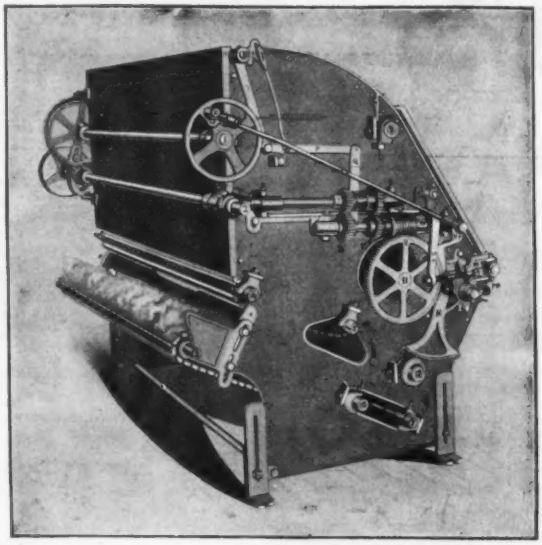
Spool and Bobbin Machinery

that enables textile manufacturers to produce their own spools and bobbins with saving and satisfaction. Tell me what capacity you require and I will tell you of the machine that will meet your requirements and what it will cost.



J. W. MURKLAND, Manufacturer of Spool and Bobbin Machinery **BARTON, VT.**

THE FISHER PATENT CARD FEED



Write Us For List of Mills Where Machines Are Used.

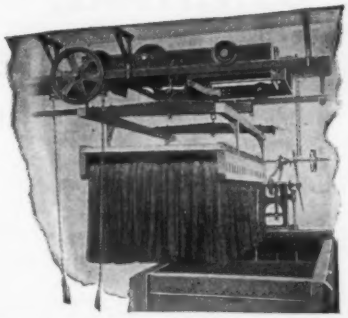
Woonsocket Machine and Press Company

WOONSOCKET, R. I.

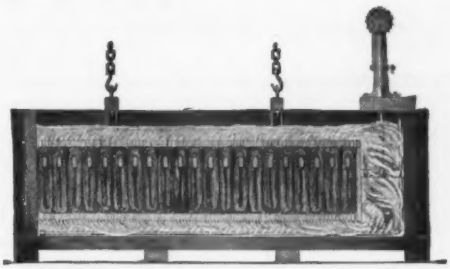
The Hussong Dyeing Machine

Patented Nov. 6, 1900. April 9, 1901. Nov. 29, 1904. June 5, 1906.

THE ONLY MACHINE THAT WILL DYE SUPHUR BLACK SUCCESSFULLY.



This illustration shows our Compressed Air Hoisting Carriage, with 300-pound Yarn Machine suspended.



Longitudinal Sectional View, showing the circulation of dye-liquor through the yarn when in operation

Points of Superiority Which We Claim for the Hussong Machine.

Durability, Even Dyeing, Saving of Steam, Saving of Dyestuff,
Saving of 75% in Labor, Makes No Waste Whatever, No Friction on the Material.
Requires but Little Power to Operate.
Leaves the Yarn and Slubbing it its Natural Condition.

Built by the **American Dyeing Machine Co.** Office 609 Pearl St., Camden, N. J.

BEWARE OF INFRINGEMENTS.

The American

WROUGHT STEEL PULLEY

Patented in the United States and Foreign Countries.

SEND FOR BOOKLET.

Is a parting PULLEY and can be applied without stripping the shaft.
It is Light, STRONG, and lasts a lifetime.
It clamps to the shaft perfectly — keys and set-screws superfluous.
Interchangeable metal Bushings to fit shafts of different sizes.
Particularly adapted to TEXTILE manufacturing.

Sold by the Leading Supply Houses all over the WORLD.

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WM. FIRTH, Pres. EDWIN BARNES, Vice-Pres. JOHN H. NELSON, Treas.

WILLIAM FIRTH CO.

Post Office Square Building 79 Milk Street, BOSTON, MASS.

. . . SOLE IMPORTERS OF . .

ASA LEES & CO., Limited,

TEXTILE MACHINERY,

OF EVERY DESCRIPTION FOR COTTON, WOOLEN AND WORSTED.

SOLE AGENTS FOR

JOSEPH STUBBS, Gassing, Winding and Reeling Machinery for Cotton, Worsted and Silk

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JAMES MACKIE & SONS, LTD., Makers of Flax, Tow, Hemp and Jute Preparing and Spinning Machinery.

GEORGE ORME & CO'S Patent Hank Indicators, etc.

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LOCKETT, CROSSLAND & CO., Engravers and Builders of Leather Embossing Machinery, etc., etc.

R. CENTNER FILS, Heddles.

GOODBRAND & CO., Yarn Testing Machinery, Wrap Reels, etc.

JOSHUA KERSHAW & SON, Roller Skins, etc.

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BRADFORD STEEL PIN CO., Comber Pins.

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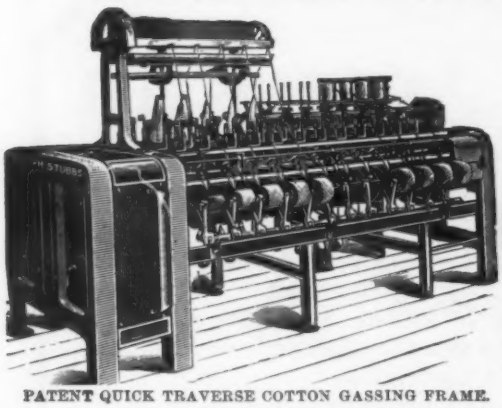
COTTON CORD AND VELVET CUTTING MACHINE CO., Corduroy Cutting Machines, etc.

PICK GLASSES, LEATHER APRONS, PATENT WIRE CHAIN APRONS.

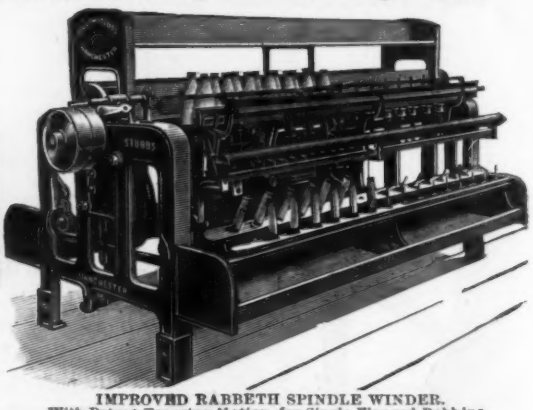
JOSEPH STUBBS - - Manchester, England.

SPECIAL MACHINERY

For Winding, Gassing, Reeling, Preparing, Polishing and Bundling Yarns.



PATENT QUICK TRAVERSE COTTON GASSING FRAME.



IMPROVED RABBETH SPINDLE WINDER.
With Patent Tapering Motion, for Single Flanged Bobbins.

Sole Agents for the United States and Canada.

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DOBBINS' ELECTRIC SOAP, ABSOLUTELY PURE AND UNIFORM.

Dobbins' Hard Water Soap, a Specific for Hard Water or Water Charged with Chemicals.

AMMONIATED POTASH SALTS FOR SCOURING.

Dobbins' Palm Oil Fulling Soap. Dobbins' "Fast Black" Soap. Pure Olive Oil Potash Soaps.

FREE SAMPLE SENT FOR TRIAL ON REQUEST.

DOBBINS SOAP MANUFACTURING CO., 119 SOUTH FOURTH STREET, PHILADELPHIA, PENN.

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AMERICAN MOISTENING COMPANY

79 Milk Street, Boston, Mass.

Received the HIGHEST AWARD on recommendation of the FRANKLIN INSTITUTE for

"Simplicity and Originality of Design."

Is the largest manufacturer of HUMIDIFIERS in the World. The last twenty year receiving the HIGHEST AWARD in this country and Europe for its AIR-MOISTENING SYSTEM. EIGHT GOLD MEDLALS and others.

The Only Perfect System of Air Moistening

And Has Been Adopted by the Representative Manufacturers of this Country.

The only System adopted in the Textile Schools. Write for Booklet "T" on Humidification. Legal Proceedings will at once be taken against infringers and users of infringements.

J. S. COTHRAN, Southern Representative, Trust Bldg., **CHARLOTTE, N. C.**

Eureka Fire Hose

THE BEST FIRE HOSE MADE.

(Trade Mark.)

For use in

Cotton Mills, Woolen Mills and Factories.

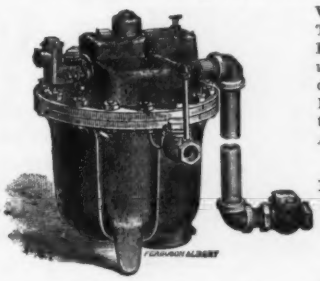
Seamless Woven and Rubber lined EUREKA COTTON HOSE, has no equal. Send for circular and testimonials.

Awarded Gold Medal at the St. Louis Exposition, 1904.

EUREKA FIRE HOSE CO.
13 Barclay St., New York, N. Y.

STEAM TRAPS

NEW FEATURES: Wearing Parts, Valve and Seat Renewable.



Class A Return Trap

We manufacture Steam Traps for all duties, High and Low Pressures, returning the Condensation back into Boiler or Discharging to Hot Well, Tank, or Atmosphere.

No Elastic Gaskets, all Joints Ground Metal and Metal.

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Catalogues A, B and C

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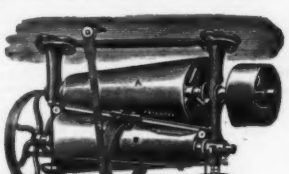
ALBANY, N. Y.
Established 1870.
JAMES H. BLESSING, Pres. THOS. F. RYAN, Sec'y & Treas.

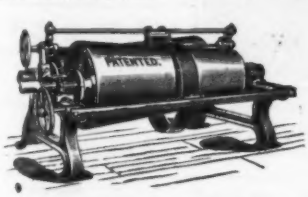
EVANS' FRICTION CONES.

Eight Thousand Sets in Operation in This Country and Europe.

A partial list of manufacturers who have Evans' Friction Cone Pulleys in operation, transmitting from ONE TO FORTY HORSEPOWER:

National Biscuit Co., Richmond, Ind., 300 sets. Merrimack Mfg. Co., Lowell Mass. 20 sets. Arnold Print Works, No. Adams, Mass. 11 sets. John & James Dobson, Philadelphia, Pa., 34 sets. Stinson Bros., Philadelphia, Pa., 40 sets. Frederick J. Falding, New York, N. Y., 20 sets.





Smith & Winchester Co., So. Windham, Conn. 250 sets. Furguson & McRae, Belfast, Ireland, 25 sets. Mercantile Laundry, So. Windham, Conn., 250 sets. Washburn & Moen, Worcester, Mass., large number, all sizes. Dennison Tag Co., Boston, Mass., large number, small sizes. Saco & Pettee Machine Co., Newton, Mass., 275 sets. Pacific Mills, Lawrence, Mass., 13 sets.

Send to G. FRANK EVANS, 1288 Center Street, Newton Center, Mass., for Illustrated Catalogue.

Vulcan Fibre Roving Can.

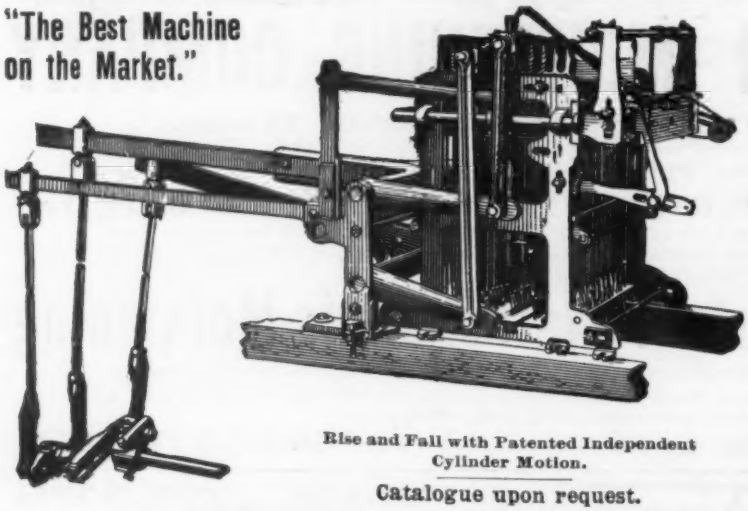
BODY—Vulcanized Fibre. SIDE SEAM—Riveted with Patented Clinched Rivets. RINGS—Tinned Steel, Brazed Joints, Curled Edges. BOTTOM—IXXX. Tin Star Corrugation; Fastened without the use of nails or screws, will not crack, warp or shrink and cannot come out. FINISH—Coated inside and out with moisture proof coating, handsome and smooth. WEIGHT—About one-half pound per inch diameter. SIZE—All cans to any exact size, perfectly round and true. DURABILITY—Superior to any other can.

Also Manufacturers of

HILL'S IXXX TIN AND GALVANIZED IRON DYE HOUSE CAN.

James Hill Manufacturing Co.,
PROVIDENCE, R. I.

"The Best Machine on the Market."



Rise and Fall with Patented Independent Cylinder Motion.

Catalogue upon request.

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Original Fine Index Machines

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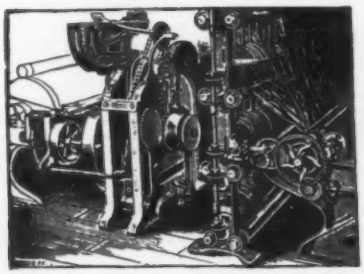

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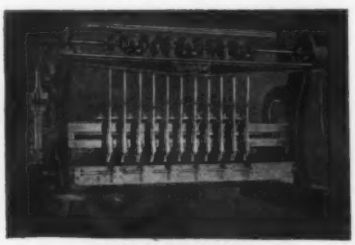

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FOR ALL PURPOSES WHERE A NUMBER OF ROWS OF SEAMS ARE REQUIRED

BUILT WITH ANY REQUIRED NUMBER OF NEEDLES.

DESIGNER OF SPECIAL MACHINERY | WALPOLE, MASS. U. S. A. | PAPER SLITTING MACHINES

"One machine instead of two."

MERIT CONTINUES TO BE RECOGNIZED.

400 Sold to the largest and finest mills in the United States

NASMITH Finest Quality

Less Waste **COMBERS**

Combs any length of staple.

600 SOLD to the largest and finest mills in England and on the Continent.

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Set of 6 Combers, 10½ in. Lap of 6 heads each.	Set of 6 Combers, 12½ in. Lap of 6 heads each.
4500 to 5200 lbs. per week of 53 hours. The floor space required for set of 6 Nasmith Combers, 1 Ribbon and 1 Sliver Lap Machine is 662 square feet.	5200 to 6100 lbs. per week of 53 hours. The floor space required for set of 6 Nasmith Combers, 1 Ribbon and 1 Sliver Lap Machine is 677 square feet.

Messrs. John Hetherington & Sons., Ltd. sole manufacturers of the Nasmith Combers are in a position to promptly fill all orders having recently trebled the size of their comber plant. Send for catalogues. Full line of parts constantly in stock.

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Used with starch batches.

Excelsior Softener prevents sticking or gumming while the yarn is passing over the cylinders and the dropping of starch during the process of manufacture. Makes the yarn flexible and strong, avoiding many unnecessary delays in the weaving room. Insures clean, sweet smelling goods. *It is economical and reliable.* Send for prices, samples aud particulars.

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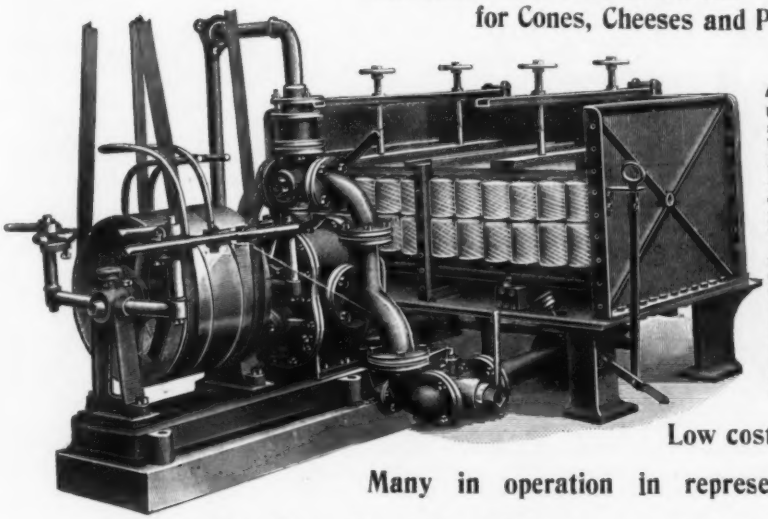
The Latest and Most Successful for Cones, Cheeses and Parallel Tubes



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give Loom Clutches a firm grip without seizing, that picks up the load quickly and yet releases instantly.

They are not affected by wear, dust, oil or atmospheric conditions, always keep clean, do not require adjustment, transmit twice as much Torque as leather-faced clutches, and are a certain means to more and better product.

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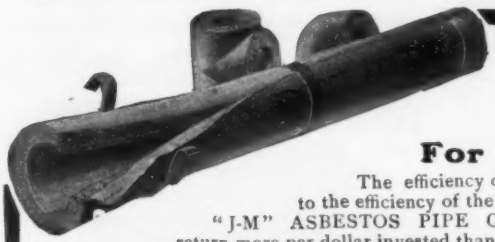

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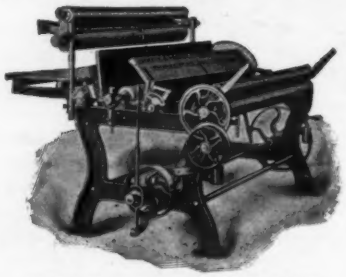

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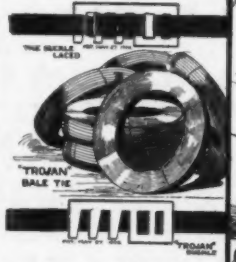
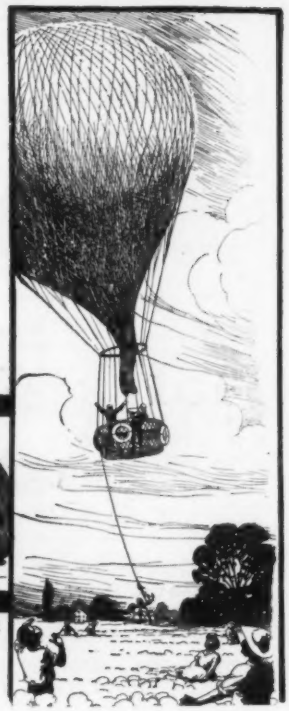
With the present high prices of rope Trojan Band and Buckle is a money saver.





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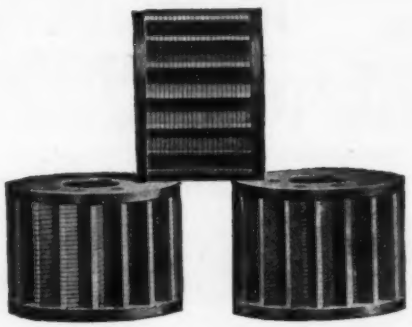

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Ask your Dealer, or send us 2c. for testing sample.
Red Label for Leather Belts;
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No **one** one kind is good for **all** belts.

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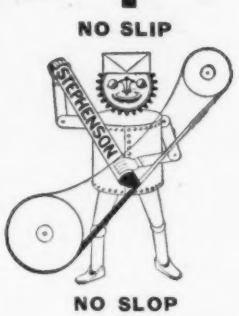

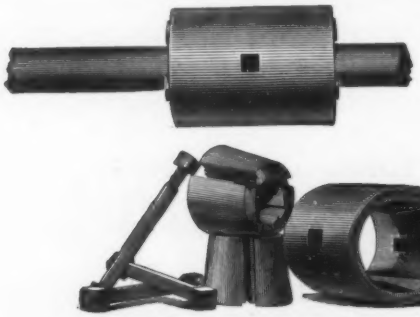

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It will take care of a greater overload with a cheaper class of fuel than any other known device.

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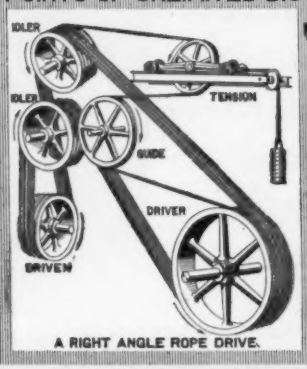

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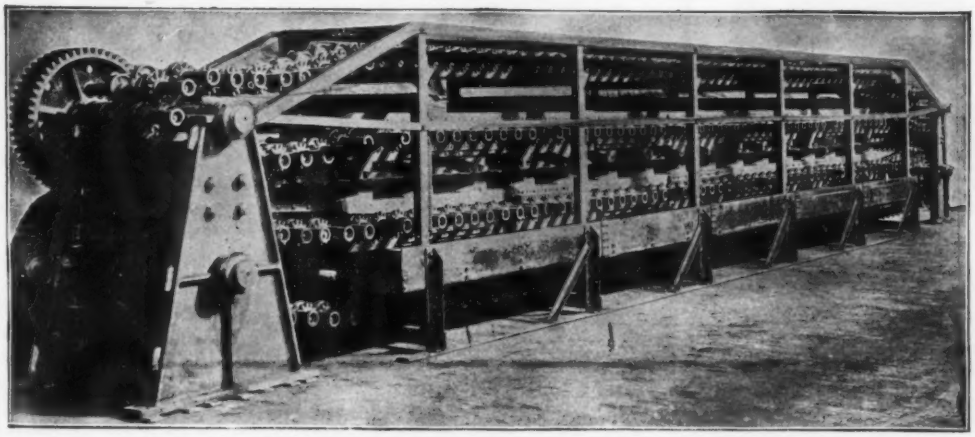
NOW READY FOR DISTRIBUTION. SEND FOR COPY

The Shuman Continuous Hank Mercerizing Machine.



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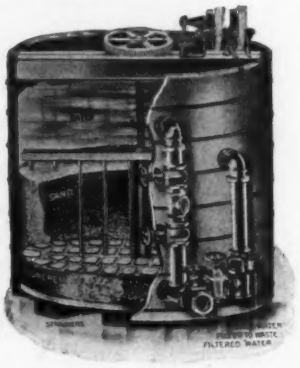
Pressure and Gravity Filters.

Intermittent and Continuous Water Softening Apparatus, manufactured under the Hungerford System of Water Purification.



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Also the Vosmaer System of Water Sterilization by means of Ozone.

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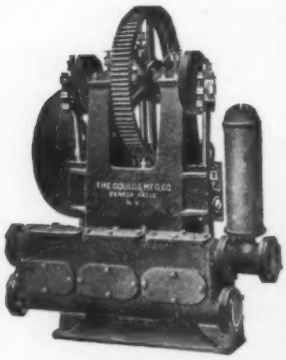

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Are by far more economical in operation than a steam pump for Boiler feeding, mines, vacuum, hydraulic pressure and water works.

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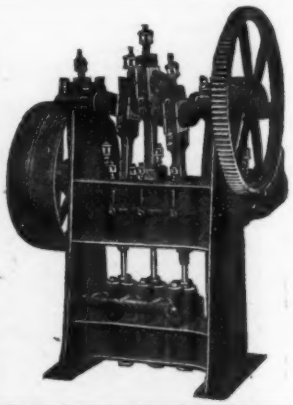

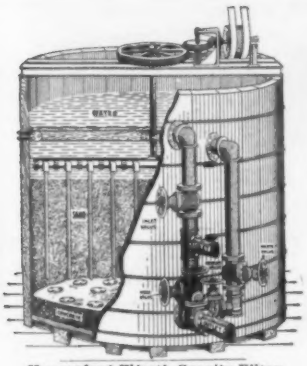

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FILTERS PRESSURE and GRAVITY
WATER SOFTENERS INTERMITTENT and CONTINUOUS

There is only one Filter, the

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the only filter which exceeds its guarantee.

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Leviathan Belting is scientifically constructed—it has ample traction—great wearing power—imperviousness to its environment—and strength against stretching. It runs slack as well as other belts do tight.

The belt so made, outlasts all other kinds when subject to steam, water or fumes.

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is? It will be sent you on request

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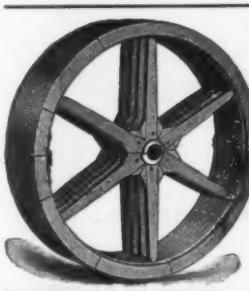

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Apron & Belting Butts, Worsted Comb & Gill Box Aprons.
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Tensile strength of Combination Tanned Belting is nearly 100 per cent. greater than best Oak Leather made. It is pliable and will transmit 50 per cent. more power; a 90 days free trial belt will prove this fact.
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"ALPHA"
THE GREEN BELT

Withstands heat, moisture gases and acid fumes better than any other belt

This belt is specially tanned by a process entirely different from any other belt tannage.

The "Alpha" is particularly adapted for small and high speed pulleys, is a non oil absorbing belt and has no equal in Dye Houses, Bleaching and Finishing Rooms. Is very tenacious and will drive one-third more that oak belting. Test one at our expense. *Write for particulars.*

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Fine for Combing or Carding
Olive Oil for Wool (Breton Brand)

This oil is manufactured by our own process which eliminates the non-soluble part, making an Olive Oil that spins as fine as any, works better on cards and combs, yields readily to soap, frees itself with greater ease than any other and last but not least *costs twenty per cent less.*

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The Lane Canvas Basket marks a distinct advance in Basket making, not only from the standpoint of economy, but of more satisfactory service.

It is perfectly smooth inside, the rim is bound with tough leather and there are no splinters, nails or rough places to catch and injure materials.

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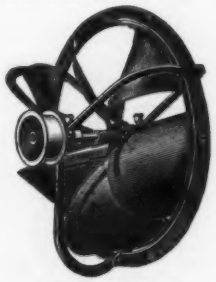
Very efficient and economical for drying.

This is our Berry Wheel, the most effective agent for moving air, eliminating steam and other impurities in the atmosphere.



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STEAM JACKET KETTLES

Guaranteed to stand 150 lbs. cold-water test.

Equal, if not Superior, to any in the market

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It Attracts Universal Attention Because It is THE BEST

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Has taken the lead in the United States, and is everywhere recognized for its efficiency. After competitive tests, lasting more than one week, THE UNITED STATES GOVERNMENT placed an order for 1,200 of

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Hydro-Extractors, Exhaust Fans, Dye Tanks and Tubs.

Adjusts itself to an uneven load, runs without vibration. Unusual capacity for high-class work.

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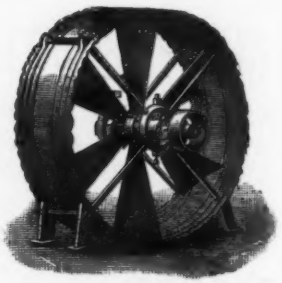

Moves more air than any other fan made. Very efficient under widely varying conditions. Noiseless and does not obstruct the light.

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Y. & T. Electric Hoists are made in capacities from one to thirty tons, and to operate on voltages from 110 to 650 direct current. They are equipped with series wound crane motors, giving high speed with light loads.

Ordinarily it balances on a single upper hook which affords great flexibility, but may readily be built into crane or trolley.

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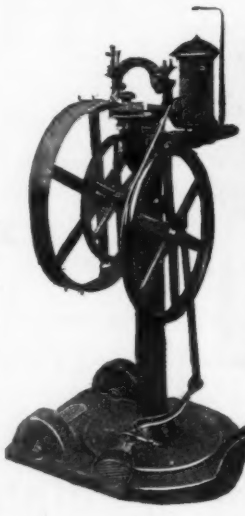

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No. 9.—Portable Foot-Power Rotary Sewing Machine

It is especially adapted for use in Cotton and Woolen Mills, Bleacheries, Print Works at the Printing Machines, in Dye Works, Cloth Rooms, at the Fulling Mill, Shears, Calendars, Gigs, Drying Machines, etc., or any of the different finishing processes in textile mills.

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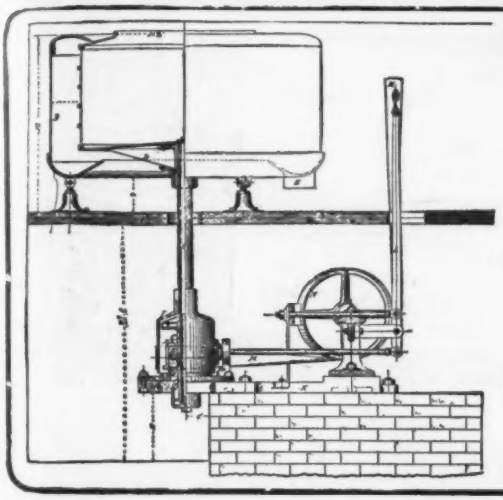

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MANUFACTURERS OF

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We build the very best types of

MODERN, HIGH SPEED, GEARED MACHINES,

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Agents SAMUEL LAWSON'S SONS' Jute and Flax Machinery.

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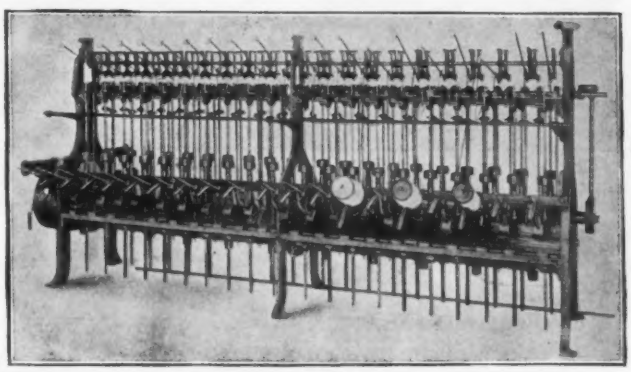
Used by most all manufacturers of heavy goods in the United States and Europe.



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Builders of Improved

Cloth Tentering and Drying Machinery

for WOOLENS, WORSTEDS, FELTS, etc.

Built Upright or Horizontal with Low Down Feed

Ventilating Fans a Specialty

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Shultz Sable Rawhide Belting

is pliable and has a soft, clinging surface, while its rawhide interior gives it a tensile strength 30% to 50% greater than that of oak-tanned belting.

It clings to small high-speed pulleys without slipping and with small initial tension, will develop a large effective pull. Because of its pliability, it is especially suitable for quarter turn or cross drives and will outwear any other belting made.

Do not tie up your whole factory and have all your men and machines standing idle for the sake of cheap belts, but send for SABLE BELTING and Book "6."

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Twelve-Arm construction used on Pulleys from 12 in. to 28 in. inclusive, 14 in. to 24 in. width of face inclusive.

"Latshaw" all-steel pulleys insure saving and safety in power transmission.

They are dependable long lived pulleys. Each half section is made of one solid piece of steel. Sizes from 14 to 24 inch face have double row of arms of special design that gives abundant strength yet offer little resistance to the air. Let us tell you more about them.

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Boston Stock: Brown-Wales Co., Chicago Stock: R. R. Street & Co., New York Stock: Henry J. McCoy Co.

Steam-Tight Joints

every time is our claim for this Die Stock. You can fit any old or new thread. It is quick, light and strong.

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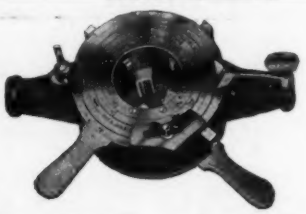

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Acid proof and Waterproof floors for Dye Houses. Concrete Construction of Mill Buildings and Chimneys.

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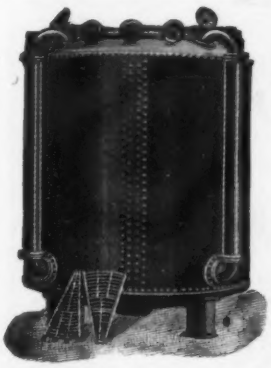

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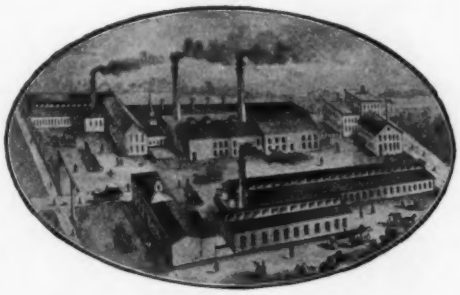

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Sample Cards Sent on Application.

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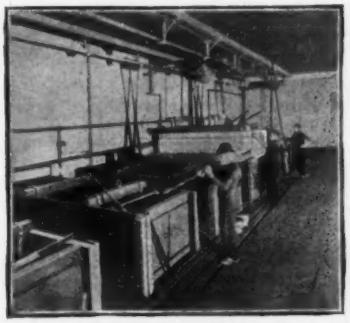
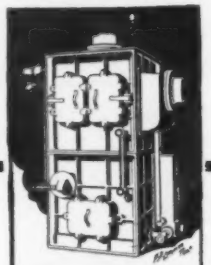
This cut shows a new and useful machine patented by D. F. Waters for the dyeing of any color on Worsted, Woolen, Cotton and Merino Yarns.



Being successfully operated by some of the largest manufacturers in the country.
The saving of labor will more than pay for a machine in a few months.
Capacity; 2,000 lbs. a day per man.
Machine can be seen in operation at any time at my plant where I have 13 in operation all the time.

D. F. WATERS,

53 and 55 Wister St., GERMANTOWN, PHILADELPHIA, PA.



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How A Cochrane Feed-Water Heater and Receiver Pays for Itself 3 Times Over.

1st. It heats all water for the boilers to the boiling point, replacing 1/7 of the coal. Incidentally in doing this it precipitates carbonates of lime and magnesia and other scale-forming substances, reducing boiler cleaning and repair bills. It also condenses some of the exhaust steam and adds it to the feed water, in amount equal to about 1/6 of the latter.

2d. A Cochrane Feed-Water Heater acts as a receiver for the drips from the exhaust-steam heating system of the building, drying coils and the finishing and drying rolls. It thus saves the water represented by all steam so used and conserves all the heat contained in the same, except that actually consumed in drying and heating.

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In all these uses of the Cochrane Feed-Water Heater you can be certain of having no trouble from oil. The Cochrane Oil Separator attached to and forming part of the Heater takes care of this. No other Separator gives the same service—Millions of H. P. of references. Let us refer you to the plants in your own neighborhood where steam for heating water for dyeing purposes, boiler feeding, etc., is kept free of oil by COCHRANE FEED-WATER HEATERS or COCHRANE OIL SEPARATORS.

The correct working together of the parts of a steam plant has received a good deal of attention from us for more than thirty years. Perhaps we can be of service to you. Our advice and ideas go along with our apparatus.

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The Perfect Form of Liability Insurance

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Maryland Casualty Company

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The Maryland continues to sell, at fair rates, the Standard form of Liability policy, which is as good as the best sold by any other company.

The company also writes Elevator, Steam Boiler, Water Damage, Physicians' Defense, Plate Glass, Disability, Health, Fly Wheel, Burglary, Sprinkler Leakage, Teams, and all other classes of casualty insurance.

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ANALYTICAL AND TECHNICAL CHEMIST
No. 1501 REAL ESTATE TRUST BUILDING
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Lord & Nagle Co.,
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Gentlemen:-

After sending check, we cannot refrain from giving you our opinion as to the value of the money expended, and the results obtained by placing our advertising matter with the "Textile World Record."

When we started to put the "Nevershrink Process" on the market, it appeared to us as though everyone was prejudiced against the treatment of wool to prevent it from shrinking. It was at this time that your representative persuaded us to place a small advertisement in your magazine; later upon several occasions you referred to our process and re-produced some of our cuts illustrating experiments made. Our success has been wonderful, not only in the United States and Canada, but abroad. Everywhere the value of the "Nevershrink Process" is becoming known, and this has been brought about by the "Textile World Record." In proof of this let me quote from a letter received some time ago from a firm in Norway:

"We have read an article in the September volume of the Textile World Record regarding a new process for treating wool to make it unshrinkable."

This firm not only purchased the process for use in their plant but we have recently closed a contract with them whereby they have obtained the exclusive right to use the process in Norway. In the same manner we were able to close contracts for many sections of Europe, while here the process is used by a majority of the large manufacturers.

If at any time in the future you wish to refer to us, we will be very glad to have you do so.

Yours very truly,

Charles H. Heyer

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Specify Them

WEARWELL LEATHER PACKINGS

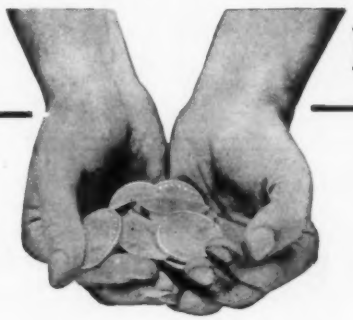
They Will Save Dollars For You.

Ordinarily the cost of applying a leather packing is many times the cost of the packing, consequently if "Wear Well" Leather Packings will last 50% longer than ordinary leather packings they are worth fully twice as much, but we do not ask double the price, in fact we are selling them at about the same price as is asked for the ordinary oak tanned leather though in many cases the wear is more than twice as long.

"Wear Well" Leather Packings are made from the very best grade of leather for Hydraulic Elevators, Hydraulic Jacks, Air Drills, Air Brakes and Air Hoists.

We want the privilege of proving to you that we can save you money on Leather Packings regardless of what make you are using, or if you are making your own packings.

Detroit Leather Specialty Company,
70 Beecher Avenue,
Detroit. - - - Michigan.

$AVE  DOLLAR$

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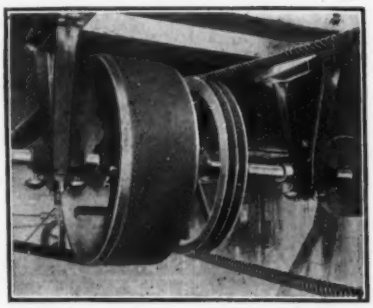

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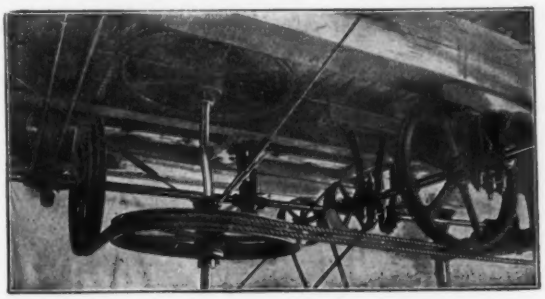

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TEXTILE WORLD RECORD.

Published Monthly by

LORD & NAGLE COMPANY,

FRANK L. NAGLE, President. **HENRY G. LORD, Treasurer.**

MAIN OFFICES:

144 Congress Street, Boston, Publication and Editorial Offices.

425 Walnut Street, Philadelphia.

BRANCH OFFICES:

123 Liberty St., New York. **463 East 42nd St., Chicago.**

Entered at the Boston Post Office as Second-Class Mail Matter.

SAMUEL S. DALE, Editor. **E. A. POSSELT, Editor Process Department.**

Subscription and Directory Rates.

The Textile World Record, including **Annual Official Directory**, (Traveler's Edition),	$3.00 per year
The Textile World Record, without the **Directory**,	$2.00 per year
The Directory alone is $2.00 per copy for the Traveler's Edition; $3.00 for Office Edition.	
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PART I. Contains a complete directory of all the textile establishments in the United States and Canada. It tells what goods are made, the number of sets of cards, spindles, looms, whether and what they dye or finish, steam or water power, who the selling agents are, the names of the officers, superintendent and buyer.

There are 22 textile maps; gives population of town and railroad connections.

PART II. Is the Yarn Trade Index, containing classified lists of yarn spinners, arranged according to kind of yarn, size and number spun, etc. All the mills with worsted machinery are included in this section.

PART III. Contains Classified List of mills doing order and commission work, also dyeing, finishing, bleaching and printing establishments, classified according to the kind of work done, and so far as possible giving width of goods handled; also shoddy, extract and flock manufacturers and wool scouring establishments.

PART IV. Manufacturer's Selling Agents and Dry Goods Commission Merchants, giving the name and address of concern, character of goods handled, different departments, with managers, list of manufacturing clothiers, and suit and cloak manufacturers, giving specialties and buyers' names. A list of city offices of textile mills is given.

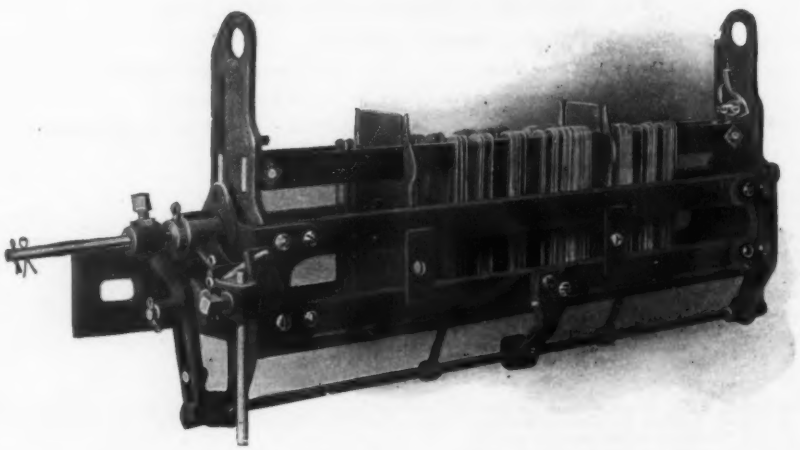
PART V. Dealers and Brokers in raw materials and stock, including wool and shoddy dealers and brokers, cotton dealers and brokers, factors and buyers and wholesale rag dealers making a speciality of textile interests.

PART VI. Buyers Index of Textile Machinery and Supplies, and statistics showing textile machinery in the United States, giving spindles, looms, knitting machines, etc.

The Directory of the Knitting Trade in the United States and Canada

Is published early each year by LORD & NAGLE CO. It is a complete directory of all the establishments in the United States and Canada manufacturing knit goods. It gives the location of the mill, the capital stock, names of the officers, superintendant and buyer, class of goods made, the machinery, including number of knittng machines and sewing machines, selling agents, if any, and in most cases the class of yarn bought. It also contains a list of commission houses making a specialty of knit goods, and jobbers and large retailers having knit goods department, in most cases giving the names of manager in charge of knit goods. The book is small so that it may be carried in the pocket. Price is $1.00.

Warp Stop Motions



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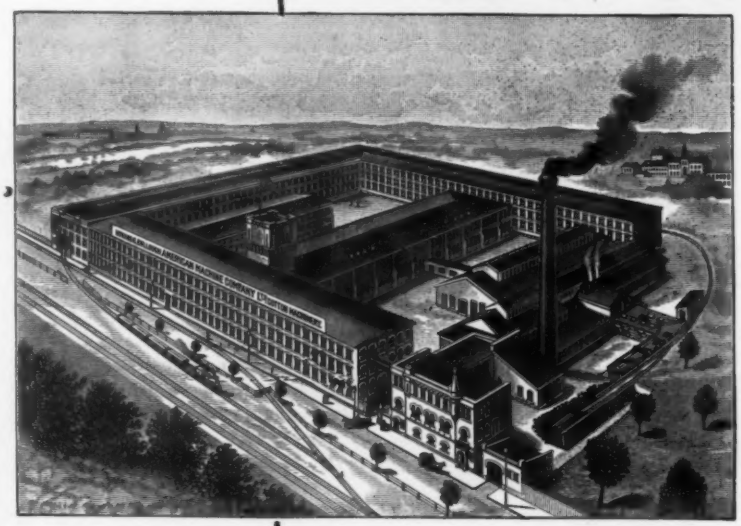

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VOL. 32 (NEW SERIES.) MARCH, 1907 No. 6

Monthly Comment.

Growth of the Converting Business.

It is interesting to note that in the rapid growth of the converting business we are following closely the long-established English methods of transacting the cotton goods business. It is not so many years ago that the output of American cotton mills was supposed to be a complete product ready for the consumer, passing through the hands of the selling agent and jobber to the retailer without change from the mill, and usually in the original packages. This has largely changed. The great business of converting has grown up; these converting houses work out their own styles, plan the construction of the fabrics, place their orders for the goods in the grey through brokers by specifications, and send the goods to be bleached, dyed, printed or finished, and finally sell them under their own trade-mark names.

The number of mills that depend for their business on the orders of the converters is now very large. Their business is largely done through brokers on a commission of one per cent. and is causing a reorganization of selling methods. Already many of the old line manufacturers selling agents recognize the necessity of a converting department to protect their own trade, and some of the former selling agents have practically become converters.

Wool in Germany.

Germany is no better off than the United States so far as official statistics of the annual wool production are concerned. Consul-General Thackara in replying to a recent inquiry of the National Association of Wool Manufacturers says:

"The production of wool in the German Empire is decreasing annually. In 1861 the number of sheep, in round numbers, was 28,000,000, while in 1900, the last year for which statistics are available, it had fallen to 9,692,500.

"There are no official statistics of the annual wool production, but based upon a weight of 4 pounds of wool per sheep and 1 1/2 pounds per lamb, the production in 1892 was 49,824,460 pounds; in 1897, 39,683,200 pounds; and in 1900, 36,376,270 pounds.

"Sheep breeding is principally carried on in Prussia, while Bavaria comes next in importance, and is followed by Mecklenburg, Wurttemberg, Brunswick, and Oldenburg. The enormous quantity of wool used in manufacturing in addition to the home supply comes from the Argentine Republic, Austria, Great Britain, British South Africa, Belgium, France, etc. Carded wool and woolen yarn are also imported from Great Britain, Belgium, and France."

Germany's imports of wool from 1901 to

1905 show very little variation, being as follows, in pounds:

1901	331,066,986
1902	356,713,098
1903	366,713,168
1904	350,449,829
1905	364,094,099

The exports of wool, wool waste and wool yarn are small and not increasing to any extent. The exports of manufactured goods in the last four years show some increase. The principal item is cloth and dress goods which increased from 52,171,859 pounds, valued at $40,419,858 in 1902, to 57,423,216 pounds, valued at $52,478,762 in 1905.

A Novel Industrial Exhibition.

This is an age of demonstration. We want to see things, and even better than pictures we like to "see the wheels go round." In the big department stores the demonstrator has proved a drawing card and in Philadelphia several of these stores maintained in February an industrial exposition in which the demonstration idea was developed still further. Goods offered for sale were shown in the process of manufacture; the machines were set up and running in the stores.

In the braid department, braiding machines held the crowds fascinated for hours. Another popular exhibit was the manufacture of comforters and quilts and a monstrous sewing machine was the drawing card. To pick her cover and watch the comforter being made for $2.00 was an invitation few women were able to resist. It was a revelation to the average housekeeper to watch the process and learn that her eiderdown comforter started out as a piece of cotton batting about ten inches thick, and it added to the interest of the purchase that the purchaser had seen it made. In another store a ribbon loom attracted a continual crowd.

Many other machines of different lines of manufacture were shown and from the great interest shown by the public it seems assured that this industrial exposition will become a regular feature in the large department stores of Philadelphia and will doubtless be taken up elsewhere.

Trade-Marks in China.

Information has been received by the British Board of Trade to the effect that owners of trade-marks can deposit the marks of which they claim to be proprietors in China. No regulations as to registration of marks are as yet in force in China, and the Board of Trade are not aware that the deposit of marks at the present time confers any legal status or right. It can, however, do no harm, and seeing that deposits are being noted by the authorities and can be made without fee, it is for owners of trade-marks to consider whether their interests in China are of sufficient moment to make it worth their while to make such deposits. It is understood that applications for the deposit of marks can be made to the commissioners of customs at Tientsin, Shanghai, and Canton. The board also understand that marks when deposited are being numbered and filed, and that they are open to inspection.

Mill Kindergartens.

Texas is not behind other states in the attention that some of its cotton mill managers are paying to welfare work among their operatives. A recent dispatch from Bonham states that the directors of the Bonham Cotton Mills are about to build a school building, especially for a kindergarten class, to which children of the mill employees only will be eligible and no charge will be made for tuition.

This is one of the best forms of helping operatives to help themselves and it works directly to the advantage of the employer as well. By providing these kindergartens, or day nurseries, as they might more properly be called, the mothers of children so young that they cannot safely be left at home are enabled to have them properly cared for and their education begun, while they are able to go to work and earn a living, with confidence that the child will be looked after during the day. In some northern manufacturing cities and towns this plan has resulted in great advantage to all concerned and is one that could be profitably considered by manufacturers where the conditions justify it.

Honors at Tourcoing.

Honorary awards for exhibits at the International Exposition of Textile and Allied Interests, held in the city of Tourcoing, France, in the months of May to September, 1906, have recently been announced. Among the American awards are four medals to the Lord & Nagle Company, publishers of the Textile World Record; viz., a gold medal (medaille de Vermeil) for the Textile World Record, silver medal for the Official American Textile Directory, silver medal for the American Directory of the Knitting Trade, silver medal for the Cotton Manual.

Suspected Smugglers To Be X-Rayed.

The report comes from Paris that the French government is experimenting with an apparatus which will assist in preventing the smuggling of even small articles on the person. Instead of requiring the suspected person to undergo a personal examination by the inspectors he will be requested to step into the X-ray room, where a powerful machine will enable the customs officers literally to see through him and detect any such small articles as diamonds, laces, gloves, etc., that may be carefully stowed away.

Summer Vacations.

The early announcement of a two weeks' vacation during the hot summer months has been posted in the various mills of the American Woolen Company. Although the exact time has not been definitely fixed, the knowledge that the vacation is to come during the months of July or August will enable many of the operatives to make their plans in advance and arrange so that there will be no conflict between the vacation period and their own vacations, as has been the case in previous years.

Frequently notices of vacation shut-downs are not posted until a very short time beforehand, with the result that there is not opportunity to make the carefully thought-out plans that many need in order to get the full benefit of the vacation.

The summer months are trying times for the mill manager whose operatives are likely to take their vacation when they feel like it and often without notice, and it is hoped that the plan of giving an early notice will result in equal advantage to the company and the employe. No doubt this plan will be followed by other large mill owners.

The National Association of Cotton Manufacturers.

The general program for the annual meeting, which will be held in Boston on April 24 and 25, promises to be of unusual interest. Two sessions for reading of papers will be held on Wednesday, April 24, and the banquet will be held in the evening. On the following day but one session will be held in the forenoon and the afternoon will be given up to an excursion complimentary to the Association. The excursion feature is a new one for the annual meeting and promises to be of much interest. This will be the eighty-second meeting of the organization, which has become national in its scope, having nine hundred members distributed through all cotton manufacturing districts in the United States with some in foreign countries. It was in recognition of this national membership that its name was changed last year.

Which Turns Out the Most Work?

Alderman Gee, connected with the woolen trade in Bradford, England, has recently returned from a trip to this country and is telling the textile trade unions there that the English workman in the textile industry turns out more work than his American brother and gets less money for doing so because he is less well organized.

If he is speaking from observation in the woolen mills of this country we do not know where he has been to have found such marvelous trade union organization. The American workman gets high wages not only because he turns out a large product per operative, but because he is protected by a beneficent high tariff policy, which has built up the manufacturing industry of the United States. We fancy that the productive capacity per operative depends more on circumstances

and the individual than on nationality, for thousands of mill operatives in this country have worked in the mills of England and their productive capacity is not materially changed by change of country.

More Than an Operative's Training.

In its recent annual report to the state authorities the Lowell Textile School takes up the question of the requirements of its students, which are of two kinds, the day pupils and the evening scholars.

The former come not only from the immediate neighborhood, but from all over the state and beyond. The latter are employed in the mills nearby. From neither class comes the demand for merely an operative's training. The day pupils come with a good school or college education and want practical knowledge of machinery and the methods of applying what they know to mill work. The evening pupils know the practical working of the machines but want the higher education to enable them to master the theories and rules under which the machines are operated to advantage.

The report says:

There is no considerable demand for the making of "operatives" simply. The eager interest shown by these representatives of that body of our youth who have been compelled to leave the public schools and go to work before completing their education is the subject of frequent remark, and very encouraging to their instructors. Of the 200 or more evening pupils, non-residents of Lowell, a very considerable number come directly from the mills, deferring their evening meal until their return to their distant homes, at from 10.30 to 11 p. m. Some 20 of these non-residents, desiring this year to take steam engineering, and being told that they could not deal with its problems without the knowledge of the higher mathematics, employed an instructor at their own expense through the summer, and came to the school in the fall with the algebra and geometry required. To meet the demand of the evening pupils we have been compelled to divide the regular course in textile engineering into six evening courses, namely, mechanics, electricity, mechanical drawing, architectural drawing (mill construction), free hand drawing and mathematics, as shown in the table of evening courses.

While the school has developed the character originally hoped for and indicated in the act (Chapter 475, Acts of 1895) providing for incorporation, namely, a school for "instruction in the theory and practical arts of textile and kindred branches of industry," it has conformed its curriculum to the demands as they arose; and those demands from the university, the college, the high school and academy and the mill and the shop have made it a school for instruction in the sciences applicable in textile manufacture, and in the application of the principles of those sciences to the machinery and processes of textile production. The fact that the annual cost to the commonwealth for instruction per pupil at a school of this broad scope is as low or lower than at schools on a trade school basis, appears to make it desirable that, in the extension of facilities for institutional textile education, at least, our experience should receive due consideration.

Exports of Cotton and Cotton Goods for 1906.

The Bureau of Statistics has recently issued a report showing the value of the cotton and cotton manufactures exported in 1906. The following table gives a comparison with the figures of ten years ago, showing that our exports have nearly doubled; and that the manufactures of cotton goods have more than doubled.

ARTICLES	1896	1906
	Dollars	*Dollars*
Cotton unmanufactured	233,412,777	413,137,936
Cotton manufactures	19,840,609	42,961,048
Cotton-seed oil	5,735,912	13,993,431
Cotton-seed oil cake and meal	4,873,905	14,165,268
Cotton seed	205,032	245,920
Cottolene, lardine, etc., chiefly from cotton-seed oil	.....	4,801,078
Total	264,068,235	489,304,681

Tariff Wars and Neutrals.

In a recent issue the Berlin Textil-Zeitung thus gives voice to its joy over the tariff squabbles of its neighbors:

"Our readers will do well in their efforts to widen the foreign market for their products to study the political conditions in neighboring countries of which a number are entering an era of tariff wars. A tariff war is on between Servia and Austria, while another threatens to break out between France and Switzerland. It is easily possible for the German textile industry to increase the market for its products, our watchword being 'When two are fighting the third rejoices.' Nine years ago a fierce tariff war raged between Switzerland and France; as a consequence the German export trade in textile goods with Switzerland was greatly in-

creased. This result can easily happen again in the case of a Swiss-French tariff war. Spain is about to revise the commercial treaties with Germany, England, France, Italy and Switzerland, her relations with several of these countries being now rather strained. Italy and Switzerland are at war with Spain and this affords an opportunity for German merchants to increase their sales in the latter country. This condition is all the more welcome because of the increasing competition which the German textile industry has found in Italy. In recent years a large number of textile mills have been built in Italy and the products have found a market in Roumania, Turkey and the South American States in competition with German goods."

An Exhibit of Industrial Conditions.

There is to be held in Boston at Horticultural Hall in the week beginning April 8, an exhibit of industrial conditions in relation to health, safety and welfare. Admission will be free. The exhibit, which is the first of its kind held in New England, is designed to show the conditions under which wage earners work in this and other states. Its purpose is to create an enlightened public sentiment that will result in remedial legislation and the general betterment of the conditions of labor. Some of the exhibits that appeared at the New York Exposition of Safety Devices and Industrial Hygiene have been loaned, as well as others from the Philadelphia Exhibit of Industrial Conditions and the Chicago Industrial Exhibit.

What is Cotton?

This question has been agitating the Ceylon customs authorities, the Colombo and Manchester Chambers of Commerce and the British Colonial Secretary. A lot of cotton canvas arrived at Colombo from Manchester, bearing the certificate of the Manchester Conditioning House that, "both warp and weft were composed entirely of cotton fibre." The certificate caught the eye of the "Public Analyst" at Colombo, who straightway proceeded to determine by "scientific analysis" the truth of the certificate.

First he referred to a book "Allen's Commercial Organic Analysis" and learned from it that "cotton filaments appear under the microscope as transparent tubes, about 0.04 millimeters diameter, flattened and twisted around their axes and resembling the figure eight (8)." Then he raveled a sample of the suspected canvas, untwisted a few threads and laid the fibres under the microscope. Horrors! We can only conclude that he saw something too dreadful for description, for he reports as follows: "I found no fibres of this description in the samples sent me in May, 1906."

That was enough. The collector at Colombo raised the duty on the shipment because of what the "Analyst" did not find. The importer protested. The collector referred the question to the Manchester Chamber of Commerce, where it was turned over to J. H. Lester, M. Sc., F. I. C., who had given the original certificate and who reported that according to the best authorities the maximum and minimum limits of the diameter of the cotton fibre are respectively 0.001 of an inch and 0.002 of an inch, and that the figure, 0.04 millimeters (1/600 of an inch), is either a mistake or a misprint. Upon the receipt of the Manchester report the Colombo collector refunded the excess duties to the importer because the "Analyst" was unable to say whether his book was right or not.

The incident is instructive as showing the danger of purely book knowledge applied to practical affairs.

Refreshments for the Help.

We are apt to think of English manufacturers as conservative in the way of introducing new features into mill life. We sometimes flatter ourselves that we are the pioneers in welfare work for operatives. Our English correspondent in his letter this month mentions the action of several cotton mill manufacturers in providing hot coffee for the help in cold weather. It has long been the custom in many English offices and counting rooms to provide afternoon tea, or to give an opportunity to the clerks to have it at some nearby tea room.

THE AMERICAN ASSOCIATION OF WOOLEN AND WORSTED MANUFACTURERS.

This new orgnization, which has been effected for mutual protection against trade abuses, held its second meeting in New York February 21 to hear the reports of the executive committees and the committee on organization. A membership of 115, representing more than 15,000 looms, was announced and much interest has been shown by the trade at large; other applications for membership are pending.

The committee on organization reported as follows:

The committee on organization was appointed by the chairman at a meeting of manufacturers, held on Jan. 15, 1907, at the Fifth Avenue Hotel. Its function may be defined briefly under the following heads: 1—Organization; 2—Drafting of Constitution.

By organization was understood a plan for informing manufacturers of woolen and worsted textile fabrics, both of men's wear and dress goods, of the object and policy of the proposed association, and for the acquisition of members additional to those enrolled at the first meeting. To this end an announcement was issued by the secretary, dated February 10. At the conclusion of the meeting referred to, there were enrolled 54 members. Within a few days others were added, making a total of 60 members enrolled at the time the announcement was sent out.

Accompanying the announcement were blanks applying for membership, and since Feb. 10 55 of these have been returned, making the total number of members enrolled to date, 115. The number of looms represented by the present membership is estimated approximately at 15,000. In addition to the above, the committee has received a large number of responses from various mills, corporations, etc., asking for further information before deciding to become members. Without exception, however, the responses have expressed approval of the object and purpose of the organization, and it is anticipated that the next few weeks will show a very material increase in membership.

The committee has prepared a constitution, and herewith submits it for your approval. In drafting this constitution, the committee, beyond stating its objects, as expresed in Article II, has confined itself to rules of government and order for this association. Matters of detail relative to carrying out the provisions of Article II, the committee considers, lie properly within the scope of the executive committee, and will be embodied in their report.

In the constitution the objects of the association are set forth as follows:

The object of this association shall be to promote the interests of those persons, firms and corporations engaged in the manufacture and sale of woolen and worsted woven fabrics in the United States of America; to co-operate for the improvement of all conditions relating to the industry; to regulate and correct abuses current in the trade; to secure freedom from injust or unlawful exactions; to interchange information relating to credits and standing; to establish uniformity and certainty in the customs and usages of said business, and to promote an enlarged and friendly intercourse among its members, and with those with whom we have dealings.

As will be seen by the list of mills represented at the meeting the present members are mostly connected with the men's wear division of the trade, but manufacturers of dress goods are eligible, and selling agents and commission merchants engaged in the selling of woolen and worsted fabrics can be admitted to associate membership and entitled to all the privileges except that of voting and holding office.

The executive committee appointed at the previous meeting presented a report on what had been accomplished up to date and made certain recommendations bearing directly on the course to be pursued in cases of unjust cancellation, unreliable claims, and other abuses, the remedy of which is the principal object of the association, viz:

That the board of directors be instructed to institute a system by which members may report to the permanent secretary causes of unjust cancellation, unreasonable claims, and other unmercantile transactions which may arise in the conduct of their business. The actuary to ascertain the facts in each case and prepare and present a concise statement thereof to the board of directors. If, after due consideration of any case so presented, the board of directors is satisfied that the member submitting the case is in the right, the actuary to notify the customer at fault that unless the matter at issue is satisfactorily adjusted, notice of the facts of the case will be communicated to the members of the association. And the proposed system to provide for the method of informing members of such cases as should be brought to their knowledge.

That the board of directors be instructed to prepare a general plan of voluntary arbitration for settlement of trade differences that the members of the association may have with any of those to whom they sell or from whom they buy.

That to avoid ambiguity and uncertainty in the use of certain trade terms, the board of directors be requested to give an official definition for the following terms commonly employed in sales of certain classes of merchandise: "Sold as are." "Sold as seconds." "Sold as unmerchantable." "Sold subject to no claims."

The following officers were elected:

President, Joseph E. Fletcher, Coronet Worsted Co.; first vice president, John P. Wood, Pequa Mills; second vice president, Louis B. Goodall, Goodall Worsted Co; secretary, Charles Porter,

Jr., Charles Porter & Sons; treasurer, Arthur M. Cox, Plainfield Woolen Co.

Board of Directors: Frederic S. Clark, Talbot Mills; Henry M. Steele, E. T. Steele & Co.; H. B. Beebe, Jr., Beebe-Webber Co.; John W. Nary, Princeton Mills; Botany Worsted Mills; W. A. Guile, Jr., Earnscliffe Worsted Mills; Theodore Howard, Waterhauser & Howard; Ed. Mair, Crown Mills; Richard A. Strong, Strong, Hewat & Co.; L. D. Tyson, Knoxville Woolen Mills.

In accepting the office of president, Joseph E. Fletcher spoke in part as follows:

The thought that comes to my mind as I recall the enthusiasm and spirit manifested by this meeting, is one of wonder that we have not before joined in fraternity of interest. The policy of our association will be broad enough for all to stand upon, and at the very outset of our career, we wish earnestly to disclaim the assumption of an attitude in any respect antagonistic to other interests. The great industries of our country have interests mutual in their character and policy, and the highest aim of our association, must be to promote an intercourse both friendly and beneficent among those who avail themselves of its membership.

It is desirable for the successful attainment of our purpose, that our membership should be large, and that the spirit already manifested should be encouraged and sustained. Our efficiency is in due proportion to our members, and for additions to our ranks we must rely mainly upon the personal aid and influence of those who have already joined. Your good offices and co-operation are, therefore, earnestly solicited in this matter.

In conclusion, gentlemen, I take this opportunity of expressing to you my appreciation of the honor which you have conferred upon me in electing me to the office of President. I need not add that I shall endeavor to carry out the policy of our association in a manner consistent with the best interests of all concerned.

The names of the mills represented at the meeting follow, arranged by states:

Connecticut:
- Angus Park, Airlie Mills, Hanover.
- French River Textile Co., Mechanicsville.
- Glen Woolen Mills, Norwich.
- Meriden Woolen Co., Meriden.
- Monarch Woolen Mills (Inc.), Montville.
- Plainfield Woolen Co., J. E. Fletcher, president, Central Village.
- Salts Textile Manufacturing Co. (Owyhee Mills), Bridgeport and Norwalk.
- Warren Woolen Co., Stafford Springs.

Indiana:
- South Bend Woolen Co., H. G. Niles, Jr., treasurer, South Bend.

Kentucky:
- Falls City Woolen Mills, R. L. Whitney, Louisville.

Maine:
- Amos Abbott & Co., Dexter.
- Carleton Mills Co., Sangerville.
- Dumbarton Woolen Mills, Dexter.
- Georges River Mills, Warren.
- Goodall Worsted Co., Sanford.
- Smith Woolen Co., Pittsfield.

Massachusetts:
- Airdale Mills Co., Pittsfield.
- Beebe-Webber Co., Holyoke.
- Bemis Mills, Watertown.
- Brown & Whittier, Lawrence.
- Comins & Co. (Inc.), Rochdale.
- S. F. Cushman & Sons, Monson.
- Daniels Worsted Mills, George Daniels, president, Worcester.
- Earnsdale Worsted Mills, Clinton.
- Enfield Mfg. Co., Enfield, Mass.
- H. T. Hayward, Franklin.
- Hopeville Manufacturing Co., Worcester.
- Massasoit Woolen and Worsted Mills, F. C. Patterson, treasurer, Huntington.
- New England Bunting Co., E. S. Hylan, Lowell.
- North Adams Manufacturing Co., H. G. B. Fisher, president, North Adams.
- Philip Pfaffmann, Worcester.
- Pontoosuc Woolen Manufacturing Co., Pittsfield.
- Rhode Island Worsted Co., Indian Orchard.
- Saxonville Mills, Saxonville.
- Singleton Worsted Co., George F. S. Singleton, Franklin.
- Fred R. Smith, West Rutland.
- Strong, Hewat & Co., North Adams.
- Talbot Mills, North Billerica.
- Tremont Worsted Co., Methuen.
- Walworth Bros., Lawrence.
- Waterhouse & Howard, North Adams.

Michigan:
- Columbiaville Woolen Mills, Columbiaville.

New Hampshire:
- Gonic Manufacturing Co., Gonic.
- Rochester Woolen Co., Rochester.

New Jersey:
- Botany Worsted Mills, Thomas Prehn, secretary, Passaic.
- Passaic Woolen Co., H. L. Basch, treasurer, Passaic.
- Princeton Worsted Mills, Trenton.
- Robertsford Worsted Mills, Samuel Hird, Passaic.
- Somerville Manufacturing Co., James Brown, Jr., president, Somerville.

New York:
- Crown Mills, Marcellus.
- Empire Worsted Mills, Jamestown.
- Jamestown Worsted Mills, Jamestown.
- James Roy & Co., John F. Roy, treasurer, Watervliet.
- Herman Waterhouse, 725 Broadway.

Ohio:
- Ashtabula Worsted Mills, Charles E. Briggs, general manager, Ashtabula.

Pennsylvania:
- Bradford Mills, Philadelphia.
- Brighton Worsted Co., Philadelphia.
- Caledonia Mills Co., Clifton Heights.
- Fern Rock Woolen Mills, Philadelphia.
- Folwell Bros. & Co., Philadelphia.
- Julius A. Gebauer, Frankford.
- Glasgow Mills, Frankford.
- Greaves Bros., Philadelphia.
- Criffon Co., Ernest F. Greeff, president, Frankford.
- A. D. Irwin & Bro., Philadelphia.
- W. A. Jenks, Philadelphia.

H. C. Jones Co., Conshohocken.
Thomas Kitson & Son, T. J. Kitson, Stroudsburg.
Maynard Mills Co., Philadelphia.
Murphy & Bros., Philadelphia.
Norristown Woolen Co., A. P. Hunter, president, Norristown.
Pequea Mills (William Wood & Co.), Philadelphia.
Charles Porter & Son, Philadelphia.
S. L. Prince, Philadelphia.
Saxonia Dress Goods Mills, Philadelphia.
H. F. Scatchard Manufacturing Co., Norristown.
Shackamaxon Worsted Mills, Philadelphia.
Shelbourne Mills, Philadelphia.
I. W. Smith Woolen Co., Bridgeport.
Southwark Mills Co., Philadelphia.
E. T. Steel & Co., Bristol.
Thomas H. Wilson, Philadelphia.
John Williams Manufacturing Co., Philadelphia.
Wolfenden, Shore & Co., Cardington.
Woodstock Mills Co., W. A. Flanagan, treasurer, Norristown.
Wright & Hall Textile Co., Philadelphia.
Yorkshire Worsted Mills, Philadelphia; also Lenni.

Rhode Island:
Ashaway Woolen Co., Ashaway.
Carolina Mills Co., Carolina.
Colwell Worsted Mills, Ralph Colwell, treasurer, Providence.
Coronet Worsted Co., J. E. Fletcher, president, Mapleville.
Dunn Worsted Co., Woonsocket.
Earnscliffe Worsted Mills, W. A. Guile, Providence.
Falcon Worsted Co., Pascoag.
Glen Worsted Mills, F. F. Arnold, treasurer, Harrisville.
Greenville Woolen Mills, Greenville.
Hope Worsted Mills, Oakland.
Kent Manufacturing Co., George Waterhouse, Centreville.
Lippitt Woolen Mill, Woonsocket.
Pawcatuck Woolen Mills, Westerly.
Paramount Worsted Mills, Providence.
W. H. Prendergast, Bridgeton.
F. L. Sayles & Co., F. L. Sayles, Pascoag.
A. L. Sayles & Sons, Pascoag.
William Tinkham Co., Harrisville.

Tennessee:
Knoxville Woolen Mills, Knoxville.
Nashville Woolen Mills Co.; L. Parks, president, Nashville.

Virginia:
Blue Bridge Woolen Mills, Basic City.
Charlottesville Woolen Mills, Charlottesville.
Virginia Woolen Co., Winchester.

West Virginia:
Crawford Woolen Co., Martinsburg.
Martinsburg Worsted and Cassimere Co., Martinsburg.

Wisconsin:
Brickner Woolen Mills Co., W. C. Brickner, president, Sheboygan Falls.
Racine Woolen Co., Sands M. Hart, treasurer, Racine.
Rock River Woolen Co., Janesville.

THEORIES BRUSHED TO ONE SIDE.

At a recent meeting of the committee representing the Cotton Spinners' Federation of Lancashire it was decided that the various schemes proposed to prevent fluctuations in the price of cotton are impracticable and should be opposed by the English delegates at the Cotton Congress to be held at Vienna next May. These schemes, which are so closely related as to form practically one plan, have occuiped much of the time of the three cotton congresses at Zurich, Manchester and Bremen.

It was first brought forward by Herr Kuffler at Zurich who, on that occasion, began by condemning speculation in these words:

> I contend that the greatest enemy that ever was, is or will be to the organization of cotton spinners or masters of any trade is speculation. . . . What we want to fight is fluctuations. Let us keep that in mind.

After this righteous proclamation Herr Kuffler unfolded his scheme, which was simply to beat the speculator at his own game:

> I assume that for every 10,000 spindles you run, I take medium counts, you use 2,000 bales a year. That is a fair average. It is all the same if I say 1,300 or 3,000. It is only for argument. Let us say 2,000. All I ask is that you take 100 or 150 bales a year from this association which I suggest you form. That is not a great risk. Take it at the average cost price to the company. If I have a sure call for the cotton then I do not want to hedge. I do not want any dealing with futures. We have been told there are more than one hundred million spindles in the world. For argument's sake let us take it that all will join. Then it is 10,000 times 10,000. That means that if for every 10,000 spindles you take only 100 bales, we can handle a million bales of cotton and no risk in it. All the risk you would incur would be to get 100 bales perhaps a little dearer than the lowest price because it is an average buying price, and this association, run entirely by spinners, has a million bales in hand. Do you think it will take a million bales of actual cotton to break any corner? I think with a quarter of a million bales you can break any corner. I do not speak only of speculations to put prices up. Sometimes we have lost by speculation to bring prices down, and one was not more legitimate than the other. If we have the power to buy cotton at the rate of 100 bales per 10,000 spindles, we can buy when prices go down, and. if necessary, on the opinion of your Committee, the bales can be thrown on the market when prices go up. With the least possible risk, that would give you an influence on the market which you do not now possess.

At the Manchester Congress the plan was proposed in a somewhat more detailed form,

and at Bremen last summer Herr Lang of Germany read a carefully prepared paper in which he got down to figures and told the international spinners not only how to do it, but what it would cost. First came the proposal, which was divided into five parts:

1. The establishment of an organization or a limited company, comprising the entire cotton industry of the world, and of which individual spinners may become members without interfering in any way with their existing associations.
2. The formal engagement of this organization to buy a quantity of cotton of the most required grades, prices and quantities to be fixed by the spinners themselves by means of votes or delegates. These details to be known at least one year in advance of the purchase.
3. The engagement of this organization to maintain this reserve intact until prices reach a fixed limit. This limit to be settled by the spinners themselves, and to be published beforehand in the same manner as the purchase price. The unconditional sale of this reserve at the fixed limit, either to members of the company or to outsiders. This for the purpose of regulating prices.
4. The payment of a fixed levy for every bale of cotton used in the mills of the members. This levy to be paid into the funds of the company for the purpose of defraying the expenses of management, and
5. For the payment of an indemnity to those who adopt "short time," if it should not be possible to establish the cotton reserve either entirely or partially. This indemnity would have to be paid to those spinners who undertake at the lowest figure to stop their mills, and this "short time" measure would have to be started, and the indemnity paid as soon as the cotton prices exceed the maximum limit fixed for the sale of the cotton reserve.

Then came an estimate of the cost of holding a million bales over the heads of speculators to "regulate prices:"

Even the question of expense, which is usually the stumbling block to such schemes, should not offer any great difficulties. It will be well to state here a few difficulties in this respect. Of course, exact figures cannot be given, as these can only be ascertained by actual experience. The deviations, can, however, not be very great from our estimated figures, and even considerable differences would not render the execution of the scheme impracticable.

The Expenses—per annum.

Interest, at	3½ to 4 %
Warehousing, insurance, and (if the cotton is stored for many years) exchange	1½ to 2
Staff,	¼ to ½
Total expense, per annum	5¼ to 6½%

say on an average 6 per cent. per annum, or one-half of one per cent. per month, which agrees with the usual delivery increase for actual cotton, and must be considered as maximum when dealing with large quantities.

A million bales of American cotton would cost at a purchase price of 4d. per pound £8,000,000 = $40,000 = francs 200,000,000.

At 6 per cent. the expenses for a reserve of 1,000,000 bales would be £480,000 = $2,400,000 = francs 12,000,000.

Let this amount be distributed over a crop of 10,000,000 bales, or rather a yearly consumption of that number of bales, and we receive a levy per bale of only 1 shilling = 25 cents = 1.25 franc, or at the outside only one-half of one per cent. of its usual value.

Even this alluring presentation of the case failed to bring about the essential subscription of 25 cents a bale. The fact is that upon examination this plan falls of its own weight. It involves an impossible agreement among the spinners of all countries, and even if it could be carried out, is nothing more or less than a resort to speculation as a remedy for speculation. It is not surprising that this visionary plan has found no favor with the practical business men of Lancashire, whose opposition, representing nearly two-thirds of the spindles controlled by the International Federation, will prove decisive at Vienna.

This elimination of the Kuffler-Lang scheme will enable the coming cotton congress to devote more time to practical remedies for speculation. That the remedies are to be found in an improvement of the methods of cotton exchanges, the head centres of speculation, was strikingly illustrated by the course of prices for East Indian and American cotton during the period of wild speculation in 1904. At a time when American cotton fluctuated within a range of six cents a pound, Indian cotton varied but two cents. The grades of each were equally well known to the trade, but the reason for the different market conditions was that American cotton was bought and sold in the market for "futures," while Indian cotton was not. Separated from the "future" market, the position of Indian cotton is nearer to that of wool, flax and silk, fluctuating under the influences of changes in supply and demand, but free from the vagaries of a market in which American cotton will drop a cent a pound when a Mr. Sully goes out to lunch, and recover the loss when he returns.

The evils of speculation being seated in the cotton exchanges it follows that the remedy can best be found by a careful investigation of exchange methods. An excellent begin-

ning of such an enquiry was made at Bremen by the reading of two papers, one on Cotton Exchanges and Their Rules by H. W. Macalister of England, and the other on Continental Cotton Exchanges by A. W. Cramer, vice-president of the Bremen Cotton Exchange. The charges recently brought against the New York Cotton Exchange by President Jordan of the Southern Cotton Association and by Congressman Livingston are on the same line, and we hope the Vienna Congress, now that the visionary scheme of controlling prices by the spinners is in a fair way to be eliminated, will inaugurate a calm, scientific and business-like investigation of the cotton exchange system throughout the world, in order that the present evils in the marketing of cotton may be abolished.

Seasonable Fabrics.

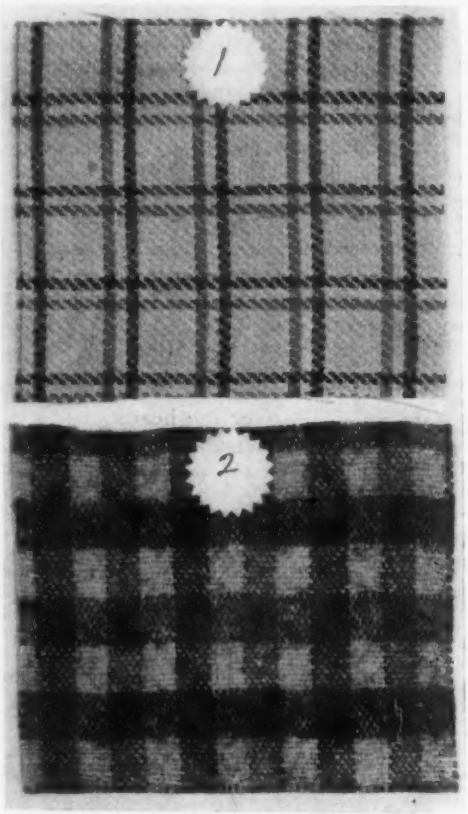
MEN'S WEAR WOOLENS.

All the new lines are fully opened, and initial business is practically all in for the heavy-weight season of 1907. The majority of the buyers who were in the market a month ago have left for their homes, and the volume of orders booked may be reviewed and commented on at leisure.

A wide disparity of opinion prevails as to the satisfactoriness of the orders booked. Most of the selling agents will tell you that they are very much disappointed with the result; others take a more cheerful view of the situation, but it can be truthfully stated that the output of very few mills has been absorbed by the business now on hand. These conditions are almost general and apply to nearly all fabrics. At this time during former years buyers were often told that a number of lines had been sold up and withdrawn; this season, the lines that have been withdrawn may be counted on one's finger ends.

It seems to be a difficult matter for the agents to realize that the custom of placing large initial orders is being done away with by the clothiers and that their method of buying is constantly changing. An order for a number of sample pieces does not indicate that the season is going to prove a failure, but that duplicates will be given on the numbers and qualities that will prove the most successful, or, in other words, will take best by the retail clothier after the sample garments are made up. The trend of buying this way has now existed for several seasons, and will probably develop more markedly as the years roll on.

The overcoating situation is spoken of as being the most unsatisfactory of all. Buyers appear to be in a quandary whether to buy plain weaves or fancy weaves. Staple blacks



have been taken quite freely, and also neat fancies in dark colors, such as herringbone weave in brown, olive and grays. Apparently there is little call for the pronounced

fancies that were predicted earlier in the season to be revived.

Woolens have made a decided gain and the outlook is certainly more encouraging for both wool suitings and overcoatings.

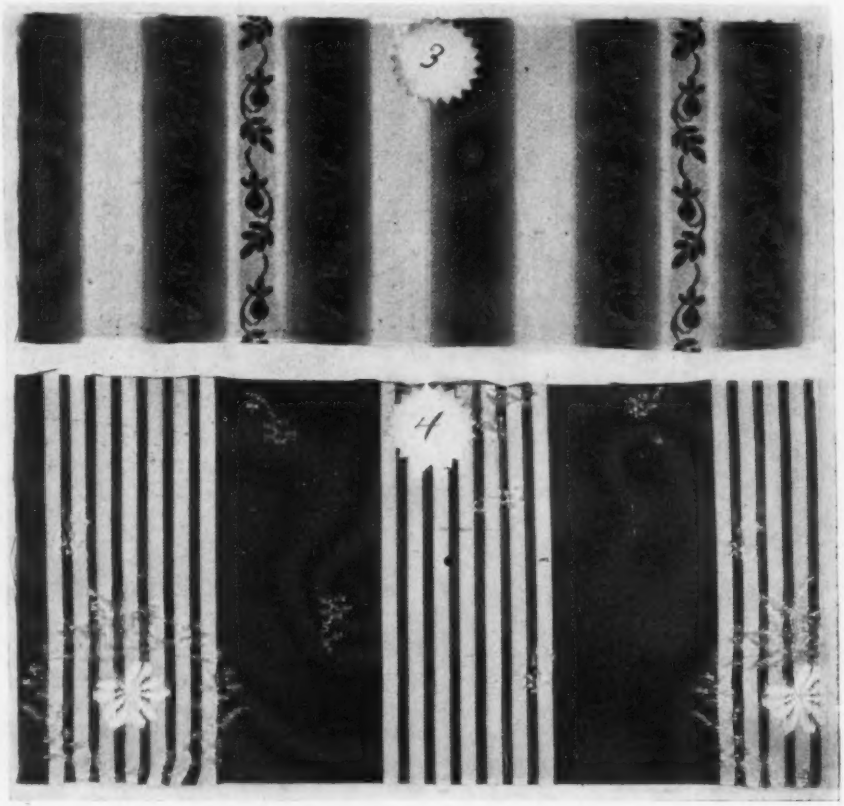
The American Woolen Co., Dept. 2, have opened their fancy worsteds as follows: Puritan, $1.67 1/2 to $2.50; Fitchburg-Puritan, $2.37 1/2 to $3.90; Cambridge, $1.42 1/2 to $2.42 1/2; Saranac, $1.42 1/2 to $2.32 1/2; Moosup, $1.45 to $1.87 1/2. Ethan Allen has opened the lines of fancy worsted suitings and trouserings from the Scotia Worsted Mills at $1.17 1/2 and $1.95; and from the Shiriff's Worsted Co. as follows: Range 9,150 to 9,178, 19 to 20 ounces, $2.20 and $2.22 1/2; range 9,250 to 9,291, 20 to 21 ounces, $2.50 and $2.55; range 9,350 to 9,375, 20 to 21 ounces, $2.75; range 9,450 to 9,490, $2.62 1/2; range 9,550 to 9,562, $3.12 1/2; range 9,650 to 9,690, $3.25 to $3.50.

The Earnscliffe Worsted Mills are showing their lines of fancy worsteds as follows: 17-ounce plain suitings at $1.55; 17-ounce silk mixtures at $1.60; 16-ounce plain suitings at $1.80; 18-ounce suiting mixtures, $2.32 1/2; satin back trouserings, $1.92 1/2. These quotations are said to be practically the same as last year.

The Perseverance Worsted Co. are showing their lines of fancy worsteds at prices ranging from $1.67 1/2 to $2.85; prices the same as last year.

The Waterhouse Worsted Mills are showing lines from the Lippit Woolen Co., 18 to 19-ounce solid colors and mixtures, $1.50; 19-ounce clear and unfinished, $2.00 and $2.07 1/2.

Lawrie, Mann and Drowne are showing American Mills all-worsted fancies finished and unfinished from $2.37 1/2 to $2.87 1/2.



DRESS GOODS.

The dress goods situation is still considered good by the domestic selling agents and the importers. Little change has taken place during the month. A large number of buyers have recently visited the market and trade with second hands has been brisk.

Narrow and hairline stripes, broken and mixed checks and overchecks in all the different weaves have constituted the bulk of the fancy business for spring wear. Worsteds, both finished and unfinished, are offered to a greater extent than usual, and with the exception of such fabrics as chiffon broadcloths, prunellas, henriettas and fabrics on the albatross order, woolen goods have not been active. Voiles, veilings and panamas in black, blue, champagne and modes were the principal weaves and colors taken.

The greatest favor has been given to black hairline checks on white grounds as shown in Fig. 1. This fabric is of German manufacture, 44 inches wide, 85 cents, imported by M. D. Howells & Co.

Some white and blue combinations are also shown, and the call for tans has been materially on the increase.

Mohair seems to hold its own in the better grade goods. Some of the newest samples show attractive designs in green and blue combinations; others in black and brown stripes, soft shades of green and golden brown in self stripe and plaid designs.

The bulk of the business booked for fall has been for plain colored chiffon broadcloths and broadcloth plaids, and also for shadow plaids on the order of fabric illustrated in Fig. 2. This is one of the Rowena dress fabrics, 54 inches wide, $1.05, manufactured by Franklin Glazier & Son, and sold by H. B. Shaen Rusch & Co.

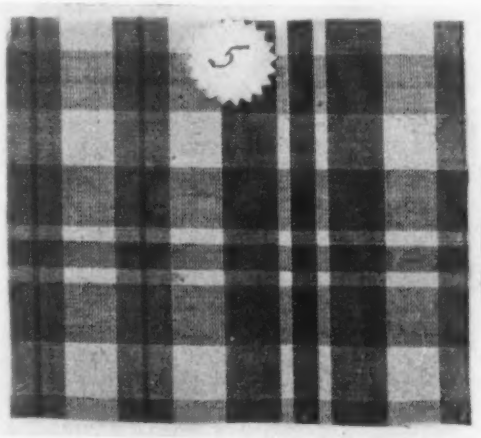
SILKS.

This is undoubtedly the best silk season the manufacturers have had for several years. The volume of business achieved and the prices obtained during the last two months have attained a high level. Buyers are getting more reconciled to the advances and in most instances prices are a secondary consideration, if the designs and colors are correct.

Silk suitings and taffetas in brown and gray, reseda, greens and blues are very popular in the narrow widths, from 75 cents to $1.25. Satin surface messalines with hair line stripe are shown in all the new shades at 71 1/2 cents. Silk marquisettes and silk voiles in both black and colors are probably the leaders with exclusive trade.

One of the highest novelties consists of silk voile and satin in alternating stripes. This is made up over a colored foundation and presents a most attractive appearance.

It is said by the manufacturers that there exists a shortage of black checks, shadow checks and plaid designs in spring colorings, but stripes are gaining in favor, and silk



authorities predict that the present season will end in stripes.

Figs. 3 and 4 show new jasper ground shadow stripes, produced by William Strange & Company, 20 inches wide, at $1.00 and $1.05 respectively.

One of the principal varieties produced this season is the rajah nouveaute by the Clifton Mill, Rogers & Thompson. Previous seasons have witnessed the plain rajah, and now it is shown with a woven self plaid effect, 21 inches wide at $1.10.

COTTONS.

To say that the cotton division of the market is strong and booming is only an oft told tale, and touches a buyer's tender spot. To be obliged to pay 14 1/2 cents for Pride of the West, 4/4 bleached, and 10 1/2 cents for

Fruit of the Loom, 4/4 bleached, is surely enough cause for complaint for a buyer whose stock is short and who must replenish at those prices, when as it often happens his competitor placed his orders when the market was 20 per cent. lower.

The principal advances have been on the lower grades, both brown and bleached. Staple domestic textiles, or the advances which have been made on such staples, are more marked than those made on finer cotton merchandise, such for instance as India linons and Persian lawns.

Napped fabrics, dress ginghams and cotton wash goods have reached a higher price level, but not to the same extent as 3 and 4-yard sheetings, ducks, ticks, and denims. Such goods are not only high in price, but some tickets are exceedingly scarce.

Several months ago it was predicted that there would be a scarcity of sheer white fabrics, but this prediction will not be realized; there exists, however, a scarcity of 84-count percales, and this standard fabric has been advanced from 9 1/4 cents to 11 cents. Amoskeag staple ginghams are now quoted at 7 cents; Lancaster at 7 3/4 cents. No such advance has taken place on the finer quality of dress ginghams. Fig. 5 shows a mercerized dress gingham from the Pacific Mills, 32 inches wide, at 22 1/2 cents.

A SUGGESTION FOR WOOL BUYERS.

BY GEELONG.

A pile of wool is like a woman—its face sometimes misleads as to its true character. The buyer in the lofts is confronted by huge squares of the fleecy material, each a problem to be solved by his senses of sight and touch. Upon his degree of accuracy in arriving at these solutions, depends his personal reputation and his employer's business success.

No man, however expert, can comb, spin or weave well if the stock is deficient in some cardinal respect. The wool buyer stands at the river end of a long fire line; if he passes empty or leaking buckets to the next man, there will be no victory for the crew.

A normally constituted man, if under thirty years of age, can master the sorter's knowledge by confining himself rigidly to the board and applying himself with diligence. The bargaining instinct, however, must be inborn to some extent, but a slight natural tendency to acute dealing can be carefully nursed by observation and enlarged through experience until the ever-ready resource and fertility of argument essential to wide practice in taking up wools is acquired. The sorter cannot, by right of his trade knowledge, be sent out to buy. Business dealing and elementary calculations are all-important points to be combined with a familiarity with the fibre. And the vital ability to estimate approximately the percentage of extraneous matter in the fleeces—"judging the shrinkage"—is only to be gained through years of close application. It is the gift of time alone.

Examining twenty or thirty lots of wool in a warehouse and endeavoring to retain a distinct recollection of the characteristics of each without notes, is almost impossible. Of course, if one is seeking a particular kind of stock, a wool for a given purpose, he may at once eliminate all lots apparently unsuited to that purpose. The problem is greatly simplified thereby and the search narrows down to a definite end.

But, as is very frequently the case, when one is "scouting" on the market with a variety of strings to his bow; when a resume of available stocks is to be collected before selection is made, it is necessary to have definite details covering a number of wools.

To be reliable, these can only be made on the spot. Handling fleeces over a board—from ten to fifty according to the probable availability of the lot in question—cutting open if suspiciously heavy, or grading roughly on the floor for quality, is the customary mode. Fleeces from the outside of the pile must still be avoided; "facing" by the packers is encouraged on the quiet by some excellent houses, although the subterfuge would now deceive only the most inexperienced.

A system of recording these impressions with the least possible amount of writing is

here offered. A pad or blank book three inches by two will suffice. The object is to avoid the repetition of tedious spelling and the consequent waste of time by substituting numbers; the code of numerical equivalents had better be committed to memory.

1. Grade	19. Locks
2. Length	20. Broken fleeces
3. Color	21. Suint or grease
4. Strength	22. Soil
5. Gray hairs	23. Sand
6. Gray fleeces	24. Heavy dung-locks
7. Paint	25. Discolored and burned
8. Composition	26. Low britches
9. Tar	27. Coarse hair through staple.
10. Seed	28. Kemps
11. Spear-grass	29. Hoggett
12. Shives	30. Wether
13. Australian thistles	31. Veinlocks
14. Soft burrs	32. Cotted
15. Hard burrs	33. Diseased
16. Spiral burrs	34. Soft to the hand
17. Chaffy barnyard litter	35. Corral sweepings
18. Sisal twine	36. Fribs

This may be modified to suit individual requirements. By writing 2 on the left side, we note that length is referred to. If "3 in." follows the 2, we see at a glance that the length was three inches. Now if we jot down 3, we are considering color, but with no degree of whiteness expressed as yet. To write "good," "fair," "poor," would not simplify the matter materially after all. Again we resort to numbers, using a percentage plan to denote degrees of the quality expressed. Thus 3/70 would signify a good average color, with 3/100 as perfection of whiteness; 3/40 stamps disapproval upon the lot if wanted for white goods. A little practice renders the thing very easy.

This is also applied to such characteristics as "soft burrs" in this manner: 14/30 equals a few scattered burrs; 14/80 equals thick with soft burrs. This system has the immense advantage that it is totally unintelligible to anyone who may come across a stray sheet of your report.

Of course it were foolish to suppose that all of these thirty-six points of wools would be found in each lot—no one growth of wool could possibly embrace them all—but a selection of the features most prominent must be made and noted, making the statements as concise and direct as can be in every case.

The best general hint for the beginner is never to talk to wool men of what he has previously done in a business way.

FLY FRAME CONES.

BY B. M. PARKER.
Assistant Professor in Textiles, West Raleigh, N. C.

In laying out a pair of cones for a fly frame the calculation is made for a bobbin smaller at the start and larger at the finish of the set than will be used, so as to have ample room at the ends of the cones. This enables the starting and finishing positions of the cone belt to be changed to obtain variations in tension. So the calculations for cones for a fine fly frame using a 1 5/8 inch empty bobbin and making a 3 1/2 inch full bobbin, is based on a 1-inch empty bobbin and a 4-inch full bobbin. The size and length of the cones are governed by the space they are to occupy, but should never be so small as to allow the belt to slip.

At all points of a true pair of cones the sum of the diameters of the top and bottom cones should be equal, and the speed of the bottom cone should decrease in inverse ratio to the proportional increase of bobbin diameter. The bobbin increases in uniform amounts from 1 inch to 4 inches, a total increase of 3 inches, which, if the cones are 30 inches long, is an increase in diameter of 1/10 inch for every inch of belt traverse, or 1/2 inch increase for a belt traverse of 5 inches or one-sixth the total length of the cones. This is misleading, as the statement is often made, based on the above facts, that the speed of the bottom cone and, hence, of the bobbin decreases in regular amounts from start to finish of a set. It is true that the increase in diameter is in regular amounts for each inch of belt traverse, but the proportional increase of bobbin diameter is not regular, being larger at the beginning than at the end of a set; hence, the variation in speed of bottom cone and bobbin is not regular but decreases as the bobbin builds by a lesser amount for each layer wound.

When the bobbin has become 2 inches in diameter it has wound on 1 inch of roving, which is one-third the total amount to be wound on; so the belt must have traveled one-third the length of the cones. Now the bobbin at this stage is one-half its full diameter so its speed and, also, the speed of the bottom cone must have decreased by one-half. The diameter of the bottom cone at

this point must be the same as that of the top cone.

The following propositions regarding cones are capable of demonstration:

First: Straight faced cones will not give the proper results when applied to fly frames.

Second: The speed of the bottom cone, and also that of the bobbin, does not decrease in regular amounts for every layer wound on the bobbin, as is sometimes supposed.

making 400 r. p. m., with a 30-tooth twist gear, which gives a front roll speed of 200 r. p. m.

The speed of the front roll is obtained as follows:

$(400\times30\times97)\div(60\times164)=118.29$ r. p. m. front roll.

The front roll is 1 1/8 inches in diameter and at the above speed will deliver 418.04 inches of roving per minute. The speed of the bobbins must be enough in excess of the

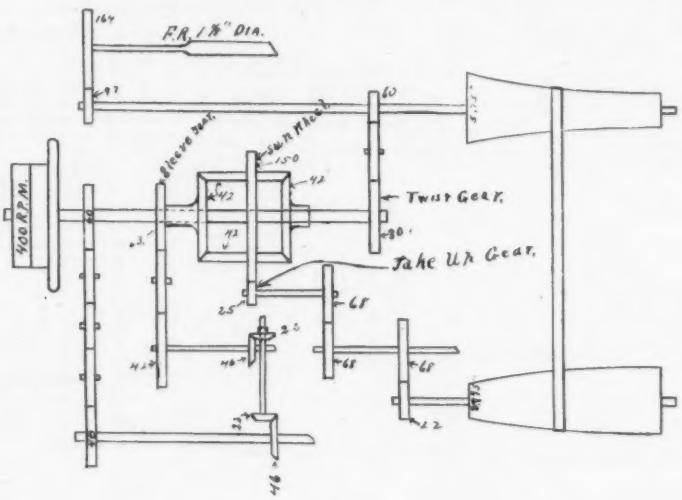


FIG. 1.

Third: The proper cones should give a variable decrease in the speed of the bobbin, this decrease being larger at the start of a set than at the end; to give this variation the outline of the cones should be concave and convex curves, equal diameters coming at one-third the length of the cones measured from the large end of top cone.

Fourth: As far as speeds are concerned, a drum and properly constructed straight faced cone will do just as well.

As the speed of the bobbin is governed by its diameter together with the delivery of the front roll, the required speeds of bottom cone and bobbin can be figured and a comparison of them made with the speeds obtained from any pair of developed cones.

Fig. 1 is a diagram of the spindle and bobbin gearing of a fine fly frame, main shaft speed of the spindles to wind on the roving delivered by the front roll and provide tension enough to keep up the ends. This excess speed of the bobbin is obtained through the action of the cones as the speed of the bobbins without the action of the cones is the same as the spindles. The spindle speed is obtained as follows:

$(400\times60\times46)\div(40\times22)=1254.54$ r. p. m. of spindles.

The circumference of the empty bobbin is 3.1416 inches; to wind on the front roll delivery it must take $418.04\div3.1416=133.065$ r. p. m. in excess of the speed of the spindles. This allows for no increase in speed to provide for the proper tension on the roving and should be increased about 1.67 per cent. which gives 135.27 r. p. m. of bobbin to wind on the delivery of the front roll. This added

to the spindle speed gives 1389.81 r. p. m. of empty bobbin. Starting with this speed the following gives the speed of the sleeve gear:

$(1389.81 \times 22 \times 42) \div (46 \times 63) = 443.12$ r. p. m. sleeve gear.

The speed of the sun wheel equals one half the difference between the speeds of the sleeve gear and the main shaft, so $(443.12 - 400) \div 2 = 21.56$ r. p. m. of sun wheel. Now starting with the speed of the sun wheel the following gives the speed of the bottom cone at the start:

$(21.56 \times 150 \times 68) \div (25 \times 22) = 399.8$ or practically 400 r. p. m.

Taking the bobbin at any diameter and following this calculation will give the required bottom cone and bobbin speeds.

In figuring the following cones all are supposed to start with a 1 inch empty bobbin and end with a 4-inch full bobbin, to be 30 inches long, and with 2.875 inches as smallest and 5.75 inches as largest diameter.

To lay out the straight faced cones: Draw two lines to represent the centers of the cones and, for convenience, divide these lines into 24 equal parts, calculate the diameters at these points and measure off the distances on perpendiculars. A line connecting these points will give the outlines of the cones.

Fig. 2 shows a pair of cones with the diameters at the different points, also the speeds of the bottom cone and bobbin at every fourth point obtained from these cones, and the diameters of the bobbin at same points that would be necessary to wind on the delivery of the front roll at those speeds.

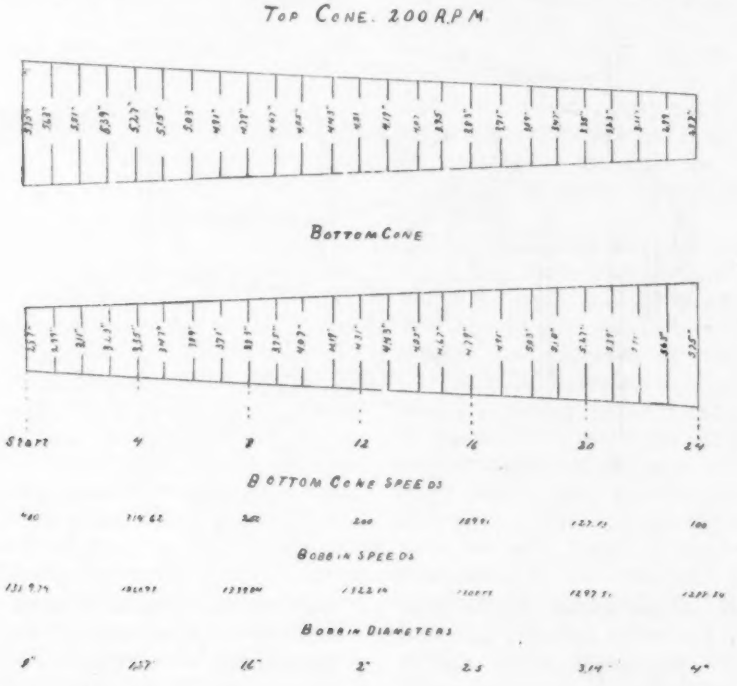


FIG. 2.

The following table gives the required speeds of the bottom cone and bobbin and the diameters of the bobbin at the beginning of a set and every fourth point. These figures were obtained by calculations similar to the one already illustrated:

Speed of bottom cone	Speed of bobbin	Diameter of bobbin
Start 400	1389.81	1 inch
4th point 266.66	1344.77	1½ "
8th " 200	1322.14	2 "
12th " 160	1308.68	2½ "
16th " 133.33	1299.56	3 "
20th " 114.33	1293.22	3½ "
End 100	1288.34	4 "

A comparison of the figures shown in Fig. 2 with those in the table above shows that straight faced cones will not give the proper results, although the figures at the beginning and end are about the same.

At the eighth point the bobbin will be 2 inches in diameter and should have a speed 1322.14 r. p. m., whereas the straight faced cones give a bobbin speed of 1399.04 r. p. m., which would require a bobbin of only 1.6 inches in diameter to wind on the delivery of the front roll. Further comparisons will show similar differences.

The speeds at the start and end coincide with those in the table, but the intermediate speeds throughout the length of the cones vary considerably from the required speeds given in the table, and equal diameters of top and bottom cones come two-thirds of the distance from the large end of top cone. The bobbin at this point would have wound two-thirds the full amount of roving, or two inches of roving, and be 3 inches in diameter, while at the speed it would run with these cones, it would have to be only 2 inches

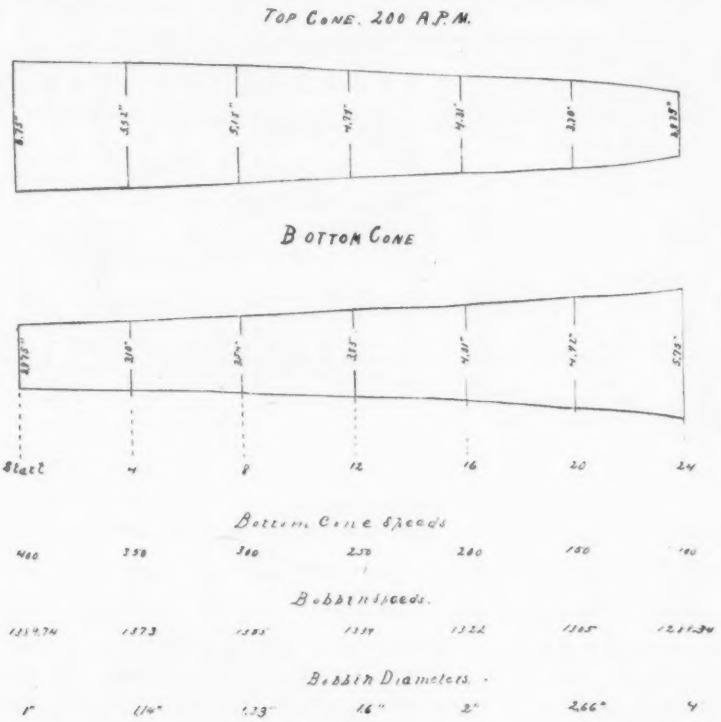


FIG. 3.

The statement has often been made "that the bottom cone decreases in speed in regular amounts with each layer wound," and one author goes so far as to assume this to be correct and develops cones on this principle. Let us see how this works out. Fig. 3 shows a pair of cones constructed on this basis with the speeds of bottom cone and bobbin that would result from such cones and the size of the bobbin that would be necessary to wind on the front roll delivery at those speeds.

The diameter of the bobbin at the different points is obtained by the following rule: Multiply the speed of the bottom cone at the start by the diameter of the empty bobbin and divide the result by the speed of the bottom cone at the point required. Having obtained the bobbin diameters, the cone ratios can be determined and are given in the fol-

lowing table, the ratio being 2 to 1 at the start:

CONE RATIOS.

Start	2 to 1
4th point	2 to 1.14
8th point	2 to 1.33
12th point	2 to 1.6
16th point	2 to 2
20th point	2 to 2.66
End	2 to 4

Knowing the speed of the bottom cone at the different points the cone diameters are found from the above ratios by the following rule: Sum of cone diameters divided by the sum of cone ratios at any point and the quotient multiplied by the top cone value gives the top cone diameter at that point. Sum of cone diameters less the top cone diameter gives the bottom cone diameter. The diameters in Fig. 3 are worked out by this rule and the speeds and bobbin diameters are those that would result from such a pair of cones.

The fault with these cones is that, although they are concave and convex, the greatest diminution in speed comes at the end of the set, where the proportional increase in bobbin diameter is less, instead of at the beginning, where the proportional increase in bobbin diameter is greater. It will now be easily seen that the cones that give the decrease in speed in regular amounts are not the ones that will do for this work.

The next step will be to figure a pair of cones that will give the correct speeds to the bottom cone and bobbin. Fig. 4 shows a pair of cones laid out on the correct princi

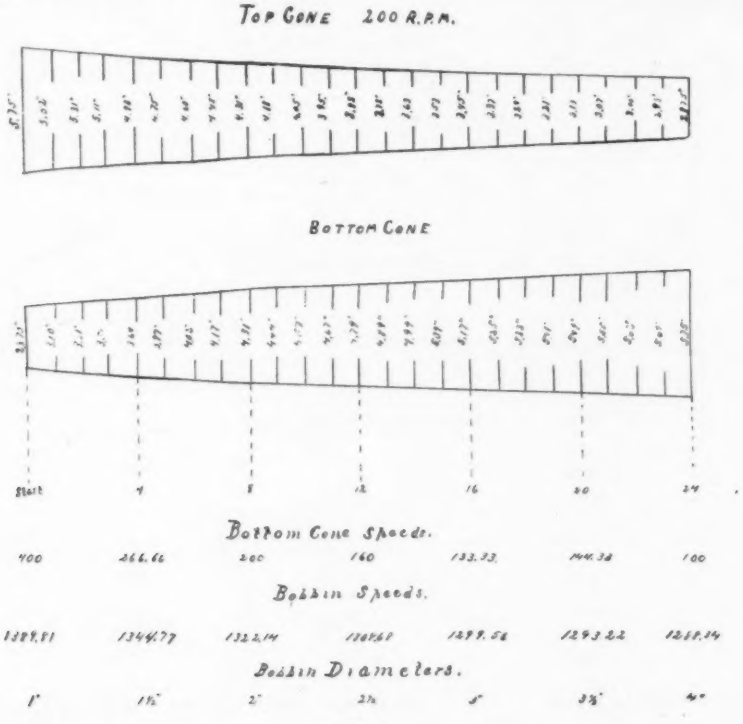


FIG. 4.

ple with the speeds that they would give and the bobbin diameters that would give the correct wind with the speeds given. The speed of the bottom cone was calculated by this rule: The speed of the bottom cone at the start divided by the diameter of the bobbin at any point gives the speed of the bottom cone at that point.

With the speed of the bottom cone the diameters of the two cones were found by this rule: Multiply the sum of the cone diameters by the bottom cone speed at any point and divide the product by the sum of the

cone speeds at the same point; this will give the top cone diameter.

Taking the figures for the first point will give the following:

$(8.625 \times 355.55) \div 555.55 = 5.52.$

$8.625 - 5.52 = 3.1.$

Then 5.52 inches will be the top cone diameter and 3.1 inches the bottom cone diameter. By similar calculations the diameters given in Fig. 4 are obtained and, know ing the bottom cone speeds, the diameters of the bobbin are easily found.

Compare these speeds with the required speeds given in the table and it will be seen that these cones are of the correct shape to give the proper results, proof of which is found in the fact that the two sets of figures are practically the same. It will be noticed that the diminution in speed is greatest at the start, gradually decreasing as the end of the set is reached. This is as it should be, for the proportional increase in bobbin diameter is greater at the beginning than at the end of the set, although the actual increase is practically the same for each layer wound.

Cones, whose outlines follow those given in Fig. 4, are theoretically correct, but there are other factors arising, in the operation of winding, which necessitates a slight modification, still not enough to cause any great difference in their outlines. The first layer is wound on a rigid wooden surface and forms a continuous spiral. The second and succeeding layers are wound on a more yielding surface and the coils have a tendency to lie in the spaces between the coils of the previously wound spiral. This latter condition does not give as large an increase in diameter as might be expected, but this is offset, to a certain extent, by the sponginess and elasticity of the mass upon which they are wound. Still it is customary to turn the bottom cone from wood and, after getting the correct curve by actual running tests, use it as a model.

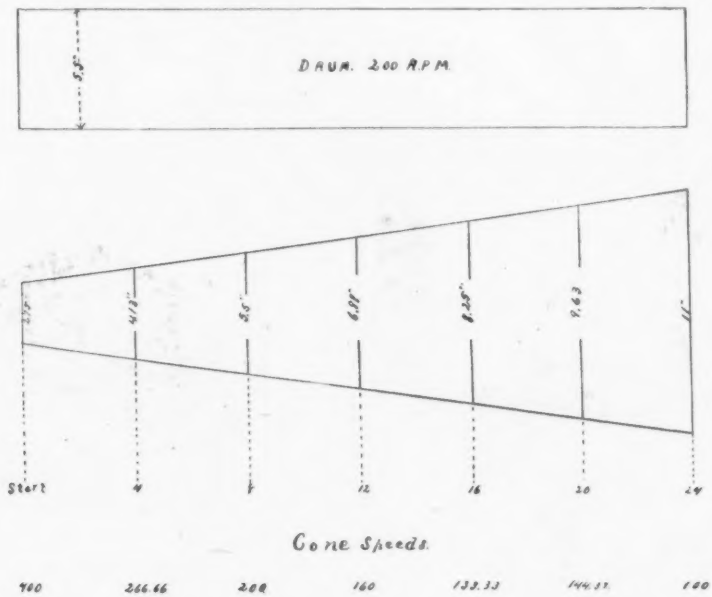


FIG. 5.

We come now to the last statement, that, as far as speeds are concerned, a straight faced cone and drum will give the proper results.

Fig. 5 shows a drum and a properly constructed straight faced cone with diameters and speeds at several points. The speeds of this cone are the same as those of the bottom cone given in Fig. 4, and will necessarily give the correct bobbin speeds at the different points. This arrangement would answer

the purpose just as well as two concave or convex cones, were it not for the fact that a binder cone would have to be employed to keep the belt tight, thereby requiring more space and being a little more expensive to the machine builders and giving no better results.

THE TOWN OF TROWBRIDGE.

WHERE SOME OF THE FINEST WEST OF ENGLAND CLOTH IS MADE.

BY JOHN MACKIE.

Trowbridge is a quaint, old-fashioned town of about 12,000 inhabitants, situate in the county of Wilts about a dozen miles from the cathedral city of Bath. The river Biss, an unpretentious stream which flows into the Avon, runs through the town and supplies to the various mills built upon its banks the water with which to cleanse and finish the wool and cloth which is manufactured there. The inky blackness of its waters as it leaves the town is a sure indication of the nature of the chief industry of Trowbridge. This stream has an unpleasant habit during the winter months, when the rainfall is sometimes copious, of rising above its normal bounds and causing much inconvenience and often great damage to the householders and mill owners in its vicinity.

Trowbridge has been a cloth town for some centuries, and was certainly carrying on the industry in the reign of Henry VIII, when that monarch gave the Royal Manor of Trowbridge, or Straburgh, to the Somerset family. It is still the most important centre of the West of England woolen trade, although it has lost much of its former glory. With the advent of the worsted trade and the keen competition of Yorkshire and other centres making cheap imitations of Trowbridge goods, the manufacturers now in business have to work hard for their existence, where their fathers and grandfathers made their fortunes very quickly and in a comparatively easy manner.

FORE STREET AND TOWN HALL.

Many of the tall, lean chimneys, which are one of the characteristics of Trowbridge, now emit no smoke, and stand only as silent sen-

tinels guarding the sepulchres of many an oldtime flourishing trade. At present, however, there are some nine or ten woolen mills working in the town itself, and a good number in the neighborhood. Most of these are worked by energetic and up-to-date firms, the fittest survivals of the struggle for existence, who realize the needs of the age and have strong beliefs in the future of the West of England trade if conducted on present day lines.

THE RUINS OF FARLEIGH CASTLE

Some of the finest cloth made is turned out of the Trowbridge mills, and such well known fabrics as Kemp & Hewitt's beavers and covert coatings, Clark's coverts and venetians, Salter's whipcords and riding tweeds, Palmer & Mackay's trouserings, Walker's beavers and trouserings, Stancomb's coverts and McCall's dress coatings and vicunas are household words in many cities of the world. At one time broadcloth and woolen trouserings were almost the only goods made in Trowbridge, many of the mills having nothing but narrow looms in them, and these were always busy. Today matters are quite different, for the narrow looms have nearly all given place to fast running broad looms of the Hutchinson & Hollingworth type, and almost every variety of cloth known in the fine and medium grades is made at Trowbridge, including worsteds, flannels, tweeds, vicunas, livery tweeds, ladies' costume cloth, etc.

The oldtime manufacturers have nearly all died out, and most of them left large fortunes behind them as well as fine estates, so that many of their sons or heirs are enabled to live independent as country squires. The present generation of manufacturers live more quietly and are obliged to devote their brains and energy to their business if they mean to succeed.

The beautiful town hall shown in the illustration was the gift of one of the Trowbridge cloth kings, the late Sir W. Roger Brown, of Brown & Palmer, now Palmer & McKay. The building cost $100,000 and was given as a jubilee gift in 1887 and opened by the Duchess of Albany in 1889. Trowbridge at one time possessed a fine old castle which was held by the Empress Matilda against Stephen. Almost all trace of this has long since disappeared, but some of the cloth mills are said to be built of the stones from the castle and there still remains Castle Street and Court Hill as reminders of the spot where the stronghold stood.

Trowbridge people are somewhat prosaic

in their tastes and habits, but a close attention to business, accounts, no doubt, for this characteristic. They are mostly hardworking, industrious people who take life seriously and their pleasures, like all English people, somewhat sadly. Most of the mills work from 6 a. m. to 6 p. m., but in winter the hours are usually changed from 7 a. m. to 6 p. m., or sometimes 5 p. m. when work is not very plentiful. The continuous clatter of passing feet, accompanied by the blowing of hooters is always a sure indication of the time of day, and this passing in the early morning serves as a rousing medium to many.

The men in the mills are mostly employed as foremen of departments, the boys being under them, but many men are weavers on the heavy broad looms. The women and girls weave in fast looms, act as feeders to the carding machines, and piecers in the spinning process, and do the mending and knotting of the cloths when woven. The men earn from 20 shillings to 50 shillings a week, and the women average from 12 shillings to 14 shillings. There is a certain amount of caste among the women in the mills, although the men do not recognize any such social distinction.

The menders, knotters and spoolers consider themselves the elite of the mill, and these ladies are often found to be dressed as well as any in the town. They come to the mill in kid gloves, some of them on bicycles, and on Sundays they parade in all their splendor for the benefit of those who wish to feast their eyes on them. Next in order of rank come the weavers, and the spinners follow, with the feeders and waste sorters bringing up the rear.

The summer holidays at Whitsuntide, when the mills are closed for two days, and again in August when another two days are given, are occasions of a great exodus to the neighboring villages and pleasure resorts. Farleigh Castle, the ruins of a famous old fortress built by the Hungerfords, is a favorite meeting place. Here is a small chapel, used as a sort of museum, in which are exhibited all sorts of mediaeval weapons and armor. In this chapel are some relics of Oliver Cromwell, who stayed at the Castle and is said to have preached there. A letter written and signed by the Protector is there, and a pair of top boots are exhibited as once belonging to this worthy.

THE "WHITE HORSE"

Another noted holiday resort is the site of the White Horse on Bratton hills, just above

Westbury. This is said to be the scene of a great battle between Alfred the Great and the Danes in 890, when Alfred won a victory, and the White Horse, which is a very good representation of that animal, is said to have been cut out to celebrate the victory and mark the spot. Underneath the turf is white chalk, so that by removing the sods the white chalk shows through and the horse is a landmark for miles around. In the town of Westbury below are the thriving cloth mills of Messrs. Laverton & Co., of world wide fame.

CROPPING SHEARS USED ABOUT SEVENTY YEARS AGO.

The chief day in Trowbridge is undoubtedly Flower Show day, an institution which all classes strive to make a success. The town is then decorated throughout with bunting and evergreens, and a general holiday is proclaimed. The show is a really good one and has stood the test of many years of ups and downs, the pleasure fair which follows in the evening being a harmless carnival in which everybody joins in boisterous merriment.

Rood Ashton, the seat of Walter Long, the president of the Board of Trade, is near Trowbridge, and a house named Midway Manor, the entrance to which is decorated with shrapnel shells, it having been once the residence of Shrapnel the inventor of that destructive projectile, is within a couple of miles of the town.

The sports of the upper and middle classes are cricket, hunting, shooting, hockey, golf, etc., but the masses favor football and some large "gates" are taken to witness matches under Association rules. There is a beautiful cricket ground and pavilion which is the best in the county, but owing to lack of support very few county games can be played there.

Many interesting relics may be found in the mills in the shape of old machines, etc. In one mill is the loom in which Sheppard's plaids were first woven, and which was shown at the great Exhibition of 1851. A pair of shears with which the cloth was cropped before the introduction of the perpetual cutting machine adorns the walls of the same mill; while in another a staff, resembling a policeman's truncheon, is a sad reminder of the "Bread Riots" when several woolen manufacturers were sworn in to act as special constables. Another firm delights in the possession of an ancient account for a "blunderbuss," which murderous weapon was used by their carman who drove a cart to London once a week, before the days of railways, as a means of protecting himself and the goods of the firm which he carried.

Trowbridge people turn out very well on Sundays to the various places of worship, and the church parade is usually large and interesting. There are four churches of the established religion, a Roman Catholic church, and chapels of the Baptist, Particular Baptist, Wesleyan, Congregational, and Unitarian creeds as well as the Salvation Army Barracks.

The industries of the town comprise, in addition to the cloth manufactories, two breweries, bacon factories, mattress and brush works, an iron foundry and an engineering business.

Japan furnishes 29 per cent. of all the raw silk produced in the world; China 26 per cent., and Italy 25 per cent.

COTTON WASTE SPINNING IN ENGLAND.

BY ROBERT REGENT.

As visiting Americans who have sought to pry into its secrets have cause to know, the conduct of the English waste cotton spinning industry is wrapped in mystery. Such, at least, is the case in respect to the production of the finer yarns. The coarser kinds used for candle wicks, sponge-cloths, quilts and some flannelettes offer less difficulty. But throughout the entire range of producers of yarn from cotton waste there must be a considerable variety of practice. Sundry manufacturers of low woolens spin cotton wastes on their woolen machinery and produce yarns of very different characters for the special types of cloth. Waste yarns are not made for sale in the woolen industry where each mill makes its own for consumption. In the Lancashire cotton trade a considerable number of concerns offer yarn for sale for making twilled sheets, blankets, cretonnes, tapes, cords and especially flannelettes.

Secrecy as to the operations relates rather to the kind of waste employed and to the precise method of using the machinery than to the nature of the machines themselves. Efficient mixing and preparation of the material comes first and it would be hard to say what combination of systems for that purpose are not in use. The ordinary woolen mules are used chiefly for the making of the coarser yarns. These spin from condensor bobbins taken direct from the card and turn off about 2 1/2 pounds of 1 1/8 run yarn per spindle in 53 hours; or about 5 3/4 pounds of 1/2 run. For filling they are made ordinarily with 660 spindles of 1 3/8-inch gauge; and with 440 spindles of 2-inch gauge for warp. Such a mule is quoted at $850 to $900.

Waste yarns are commonly not finer than 1 5/8 runs. Counts up to 2 1/4 runs are obtained sometimes by working from a card of the ordinary cotton type through a slubber of 8 to 10-inch lift. The bobbins are then placed in the creel of either a mule or a ring frame having draft rollers. According to the older authorities there could be no drafting of waste yarn until the thread was partly twisted. According to them, too, one's soft waste should not be passed through the Oldham willow.

However, there is an equipment designed for the use of mills out of the way of advantageous markets for waste, in which this old teaching is reversed. Instead of passing the hard waste through the willow, it is run through the cop-bottom breaker. Soft waste goes through the Oldham willow, then to the scutcher and into a lap by means of an automatic feed, to the card. Brooks & Doxey make sets of the Wilkinson patent roller clearer card which feeds to a second card and thus to an improved leather tape condenser producing spools in single section upon paper tubes. With hopper feed, breaker card, cross feed, finisher card and condenser ring spinning frame with bobbins and spools, the cost is about $3,000. Its output is some 5 1/2 pounds per spindle for 55 hours of 5/8 runs. The set turns out about 1,200 pounds of yarn weekly.

Being the less broken, soft waste ordinarily spins further than hard, and for the higher numbers some producers use this exclusively. On the Continent it is customary to mix hard and soft waste, but practice accommodates itself to circumstances. There is all the difference between the problem awaiting spinners who wish simply to put their own waste into a form that will command a fair price, and the problem before spinners who go out to buy waste to suit their own purpose. Requirements as to cleanliness, evenness, strength and softness are anything but uniform. And in considering means of utilizing waste the first step is to decide the intention. Is it desired to emulate the Belgians and Germans in the novelty yarns of which waste cotton is the chief component, or the Lancashire men who spin waste to suit the cloths, or the Yorkshire men who make cloth to suit the waste yarn they can spin? Depending on the end the means must be shaped.

Panama hats are made almost exclusively in Ecuador and to protect the industry a duty of 24 cents a pound is levied on the straw exported.

TEXTILE PROCESSES.

EDITED BY E. A. POSSELT.

OUR TEXTILE SCHOOL.

(Continued from February.)

STRIPE AND CHECKERBOARD SATINS.

We now will turn our attention towards fancy checker-board satin weave combinations, which are illustrated in connection with weaves and diagrams Figs. 12 to and inclusive 15 and of which weave Fig. 12

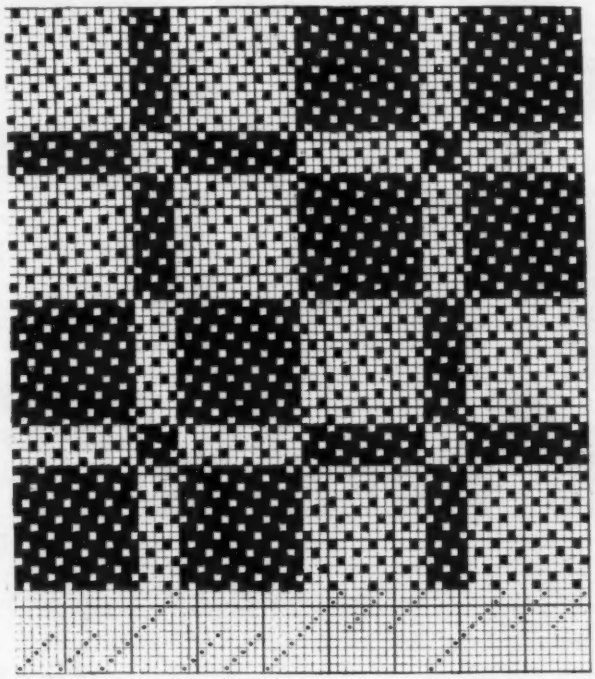


Fig. 12

shows such a fancy checker-board satin having for its foundation, the 5-leaf satin warp effect and 5-leaf satin filling effect, both effects being arranged after the following exchange of multiples: 3-1-3-3-1-3, i. e.,

15 ends warp effect
5 ends filling effect
15 ends warp effect
15 ends filling effect
5 ends warp effect
15 ends filling effect

70 warp threads × 70 picks in repeat of pattern, and which calls for 10 harness for its execution on the loom, as shown by means of [·] type below the weave.

As will be readily understood by the student, we again limited ourselves to the smallest possible combination of multiples, using even as low as one multiple of the satin weave in two instances of the repeat of the weave, and which was done for the sake of bringing the complete weave within the compass of the page, it being readily understood that in practical work, in place of using one multiple only, two, three and more multiples of the weave are used for the smallest effect desired.

Weave Fig. 13 in turn shows a fancy

checker-board weave, having for its foundation the 8-leaf satin warp effect and 8-leaf satin filling effect; the combination of multiples in our example being: 1-1-3-1-1-3 and by using one repeat of the weave, i. e., 8 warp threads and 8 picks for each multiple thus quoted, we consequently get: 10 (multiples called for) × 8 (repeat of each multiple) = 80 warp threads and 80 picks in the repeat of the combination weave and which for practical work on the loom in turn calls for a 16 harness fancy draw as shown by means of [·] type below weave. The same as mentioned before, in practical work each multiple will stand for any number of repeats of the weave, as the case may require, according to size of effect desired in the woven structure.

The motive as used in connection with these fancy checker-board designs, Figs. 12 and 13, we might also term as fancy basket weaves, calling the motive for weave for 12 the $^{3}{}_{1}{-}^{3}{}_{3}{-}^{1}{}_{3}$ 14 × 14 fancy basket; and the one for weave Fig. 13, the $^{1}{}_{1}{-}^{3}{}_{1}{-}^{1}{}_{3}$ 10 × 10 fancy basket weave.

Diagram Figs. 14 and 15 give the student two motives for elaborate fancy checker-board satins to be produced by, and where each square in the motive may stand for one or any number of multiples of the foundation satin, the ■ standing in this instance for warp effect and the □ for filling effect of the respective satin weave.

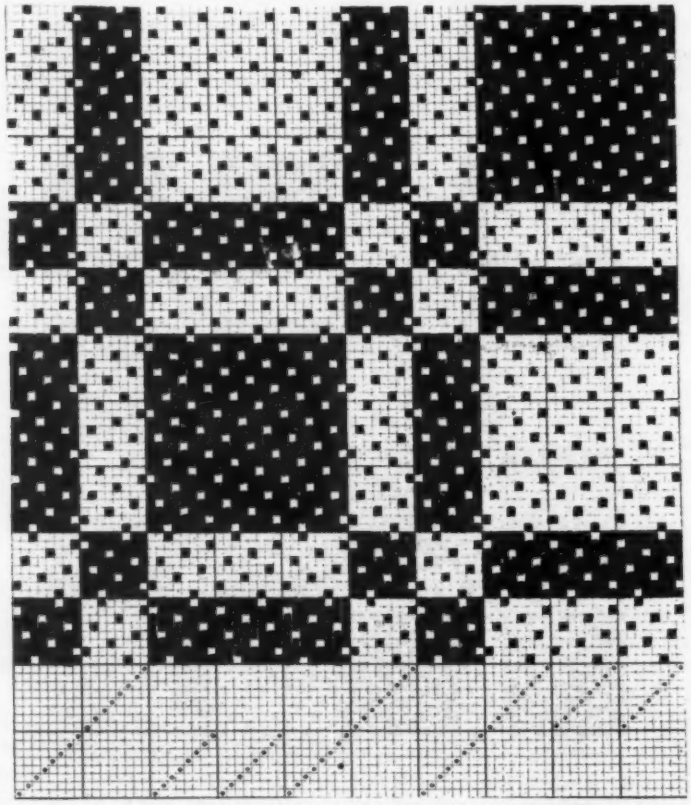


Fig. 13

The 5, 6 or 8-leaf satin may be used for the foundation satin and which in connection with either motive with the 5-leaf satin will call for 10 harness on the loom, in connection with the 6-leaf satin for 12 harness in the loom, and finally in connection with the 8-leaf satin will call for 16 harness for its execution on the loom.

Both motives shown, i. e., weaves Figs. 14

and 15 are what we term fancy basket weaves, weave Fig. 14 being

$$\frac{1}{1}\frac{2}{2}\frac{4}{4}\frac{4}{2}\frac{2}{1}\frac{1}{2}\frac{2}{4}\frac{4}{4}\frac{2}{2}$$

44 × 44 fancy basket, and which in turn, if using one repeat of the 5-leaf satin for each square in the motive, would call for 220 warp threads × 220 picks for the repeat of the full design in the woven fabric. Using two repeats of the foundation weave, i. e., in turn we would use four multiples of each foundation satin for each square in the motive, etc.

Substituting the 8-leaf satin in place of either the 5 or 6-leaf satin thus quoted, in turn would result in connection with one multiple of the weave for each square in the motive, in the complete design repeating on 352 × 352, calling again for twice the repeat

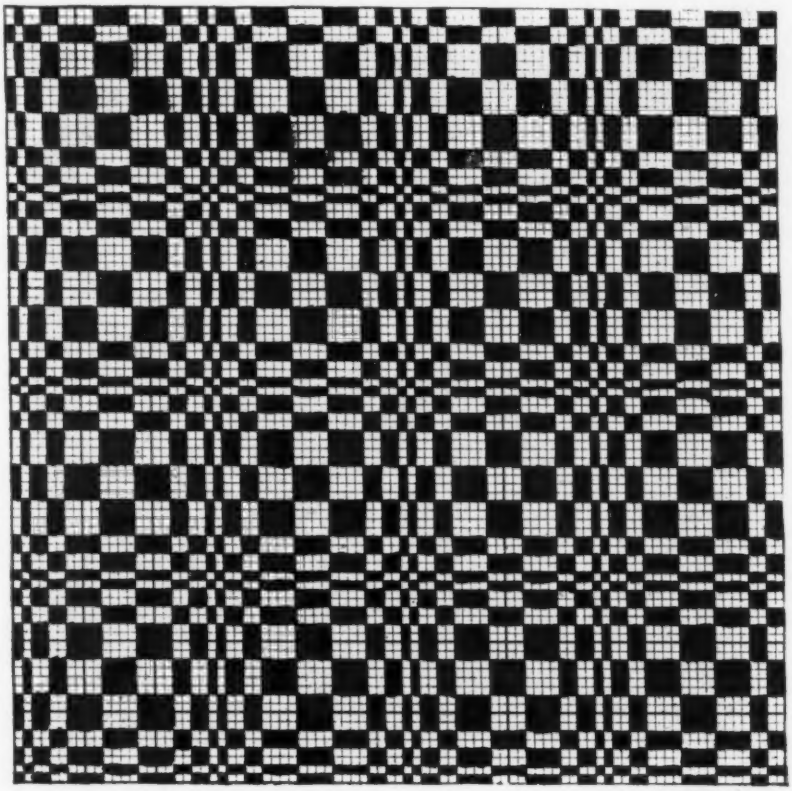


Fig. 14

the 5-leaf satin, each way, for each square of the motive, i. e., four multiples of the weave for each square of the motive, in turn will result in an effect repeating on 440 × 440 in the woven fabric, either effect quoted calling for 10 harness on the loom.

If in turn we would use the 6-leaf satin for our foundation weave, we then, if using one multiple of the weave for each square of the motive, would get the complete design to repeat on 264 × 264, calling for twice this number of warp threads and picks provided each way provided four multiples of the foundation satin are used respectively for each square of the motive.

Diagram Fig. 15 shows us another style of a fancy basket and which also can be successfully used as a motive in connection with these fancy checker-board satins in the manufacture of table cloths, etc., executed on the harness loom, and where jacquard imitation effects are the object aimed at.

Considering this motive from the point of a fancy basket, we would technically call the

same the $^{1}-_{1}-^{2}-_{2}-^{3}-_{3}-^{4}-_{4}-^{5}-_{5}-^{6}-_{6}$ 42 × 42 fancy basket weave, and which, if considered as a motive in connection with the 5-leaf satin for a foundation weave will call for 210 × 210 for the repeat of the fancy checker-board weave; said repeat being duplicated each way, provided we use two repeats of the foundation weave each way, i. e., four multiples of the foundation weave, for each square of the motive.

In connection with the 6-leaf satin, using the same motive, the repeat of the fancy checker-board design would then be 252 × 252 that is provided using one repeat each way of the 6-leaf satin for each square of the motive; using two repeats of the foundation weave each way, i. e., four multiples of the foundation weave for each square of the motive, in turn calling for 504 warp threads and 504 picks for the repeat of the new fancy checker-board design, on the loom.

Using the 8-leaf satin in turn for the foundation weave will result in 336 × 336 for the repeat of the new fancy checker-board satin, that is provided one multiple of said 8-leaf satin (whether warp or filling effect) is used for each square of the motive, using two repeats each way of the foundation weave, in turn bringing up the repeat of the fancy checker-board satin to 672 × 672 for the complete weave.

We now will turn our attention towards what we designated previously as figured effects in connection with these checker-board satins; and which will be readily explained to the student in connection with weaves and diagrams Figs. 16 to and inclusive 21.

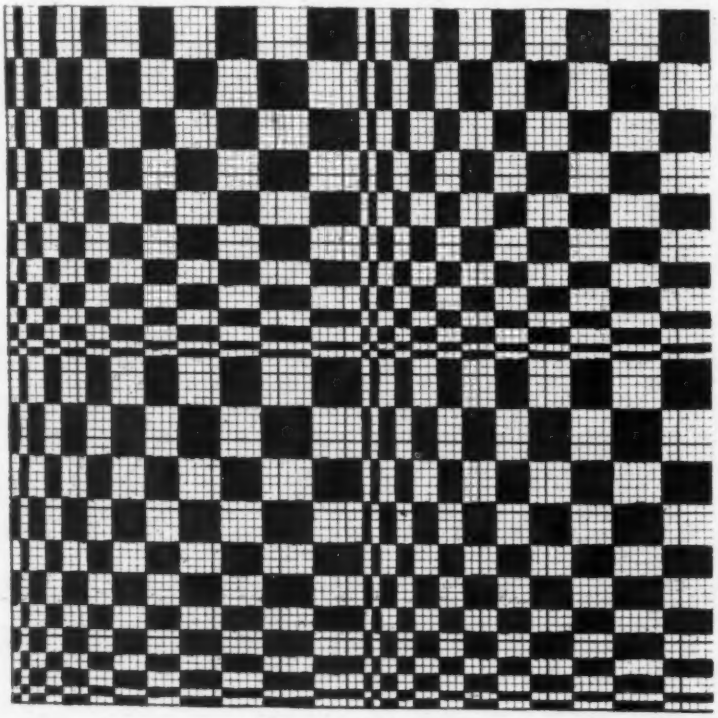


FIG. 15.

Fig. 16 shows us two repeats of such a weave, using again as small multiples of the foundation weave for each effect in the design as is possible, so as to bring our weave within compass of the page, i. e., not to take up too much space, it being by this time understood that one repeat of a weave explains the subject just as good to the student than if we would have painted any number of repeats of each effect, and as will be used

in connection with the fabric on the loom, for the fact that using two or more multiples of one effect are nothing more but a representation of the affair as produced by the loom by means of the fancy drawing in draft and harness chain or set of cards as the case may be. The repeat of the weave (Fig. 16) is 40 × 40 and which, provided we would use twice the number of warp threads as indicated in the weave in connection with each change of effect, would call for 80 warp threads × 80 picks for the repeat of the new weave. In the same manner, using respectively 3 or 4 or 5, etc., times the number of warp threads and picks for each effect, as shown in connection with weave Fig. 16, in turn would result in complete weaves repeating on 120, 160 and 200, etc., warp threads and picks respectively.

Weave Fig. 16 will readily explain the subject of how the student has to join all around each figure.

Diagrams Figs. 17, 18, 19 and 20 in turn give four sketches, i. e., motives, for similar designs, to be used in turn either with the 5-leaf satin as shown in connection with weave Fig. 16 or with the 8-leaf satin warp and filling effect as will be readily understood by the student.

Weave Fig. 16 calls for a 15 harness fancy draw for its practical execution on the loom (see [·] type below weave) for the fact that there are three different changes in the motive and (3 different changes in the motive × 5 the repeat of weave) = 15 harness, the number of harness required.

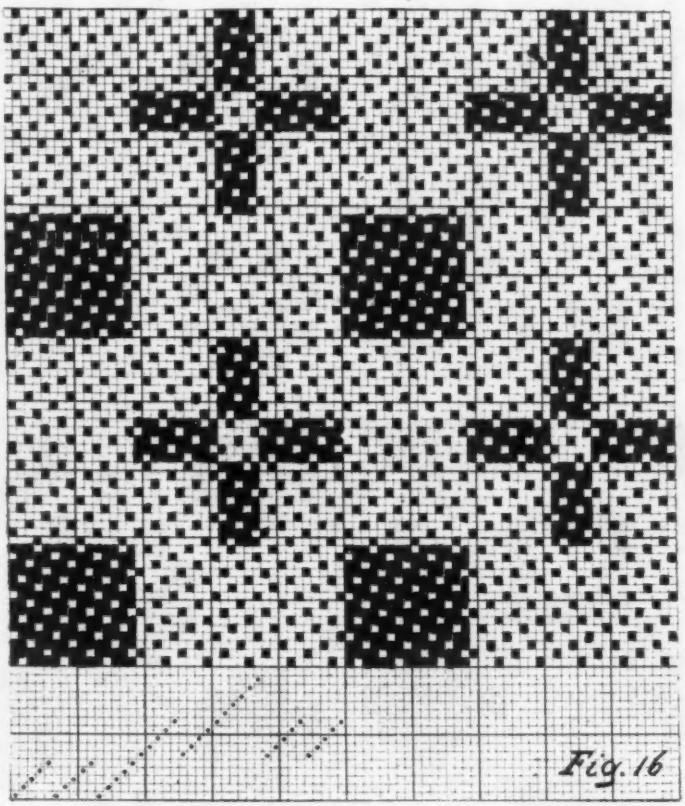
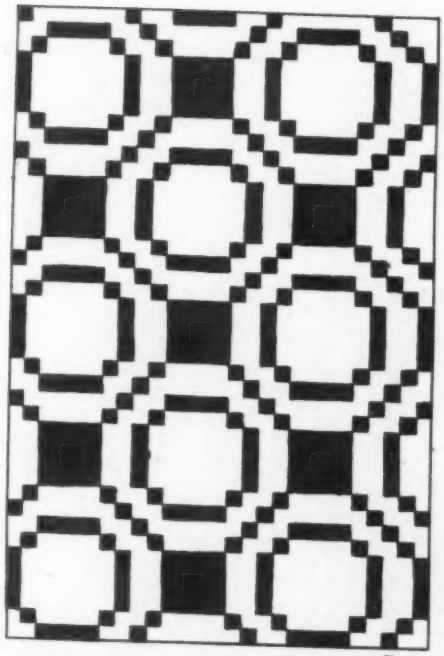


Fig. 16

Provided the 8-leaf satin would be called upon to be used in connection with the motive as used with weave Fig. 16, the number of harness necessary then would be (3 × 8 =) 24 harness.

Sketch Fig. 17 has three different changes and consequently if used in connection with



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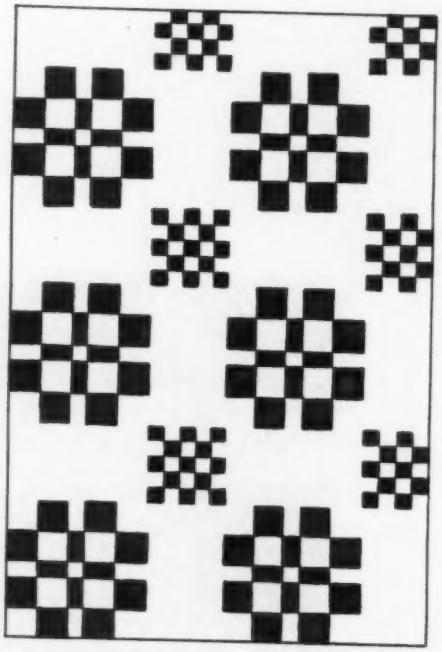

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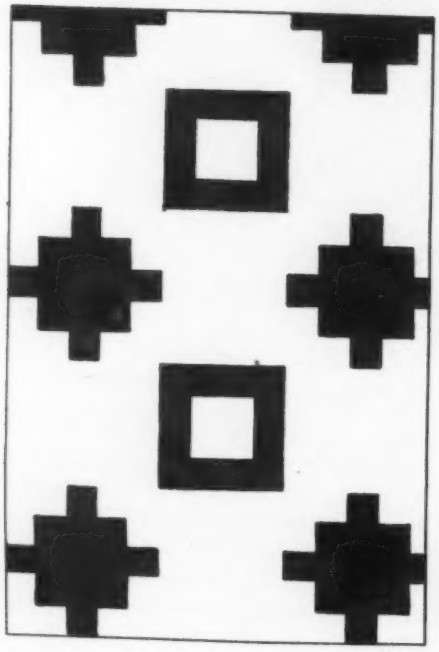

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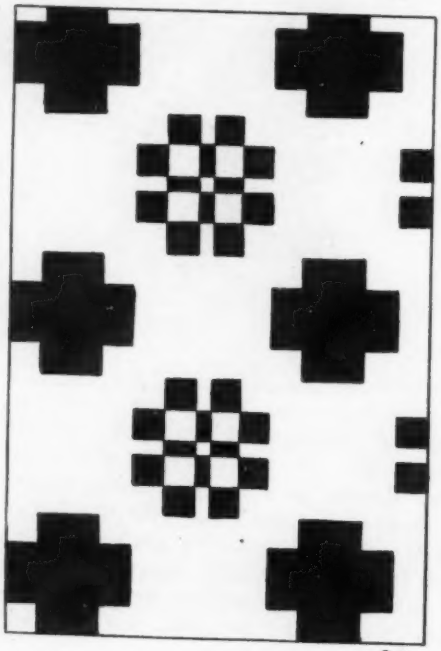

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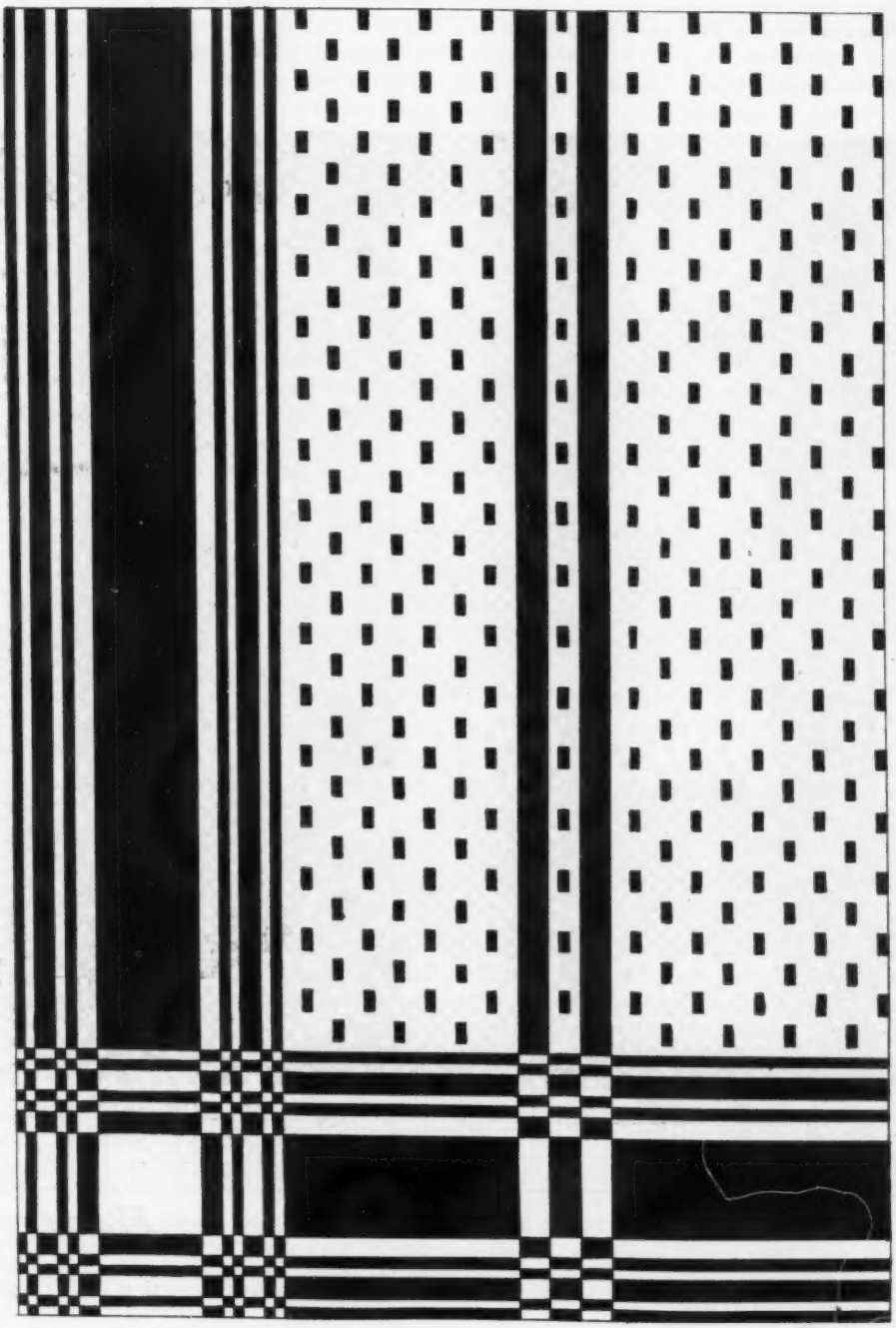


Fig. 21

the 5-leaf satins for foundation weaves, the same will call for 15 harness, fancy draw; calling for 24 harness in turn in connection if using the 8-leaf satins. Using 10 warp threads and 10 picks of the 5-leaf satins for each effect of the motive (and of which there are 16 found in one repeat of the motive) in turn will result in a weave repeating on 160 warp threads × 160 picks. Using two repeats of the 8-leaf satin for each effect of the motive naturally will result in a new weave repeating on 256 × 256, etc., etc.

Motive Fig. 18 as 14 changes to its repeat and consequently in connection with 10 warp threads of 5-leaf satin for each effect calls for 140 warp threads × 140 picks in the repeat of the complete design. Using two repeats of the 8-leaf satin for each effect of

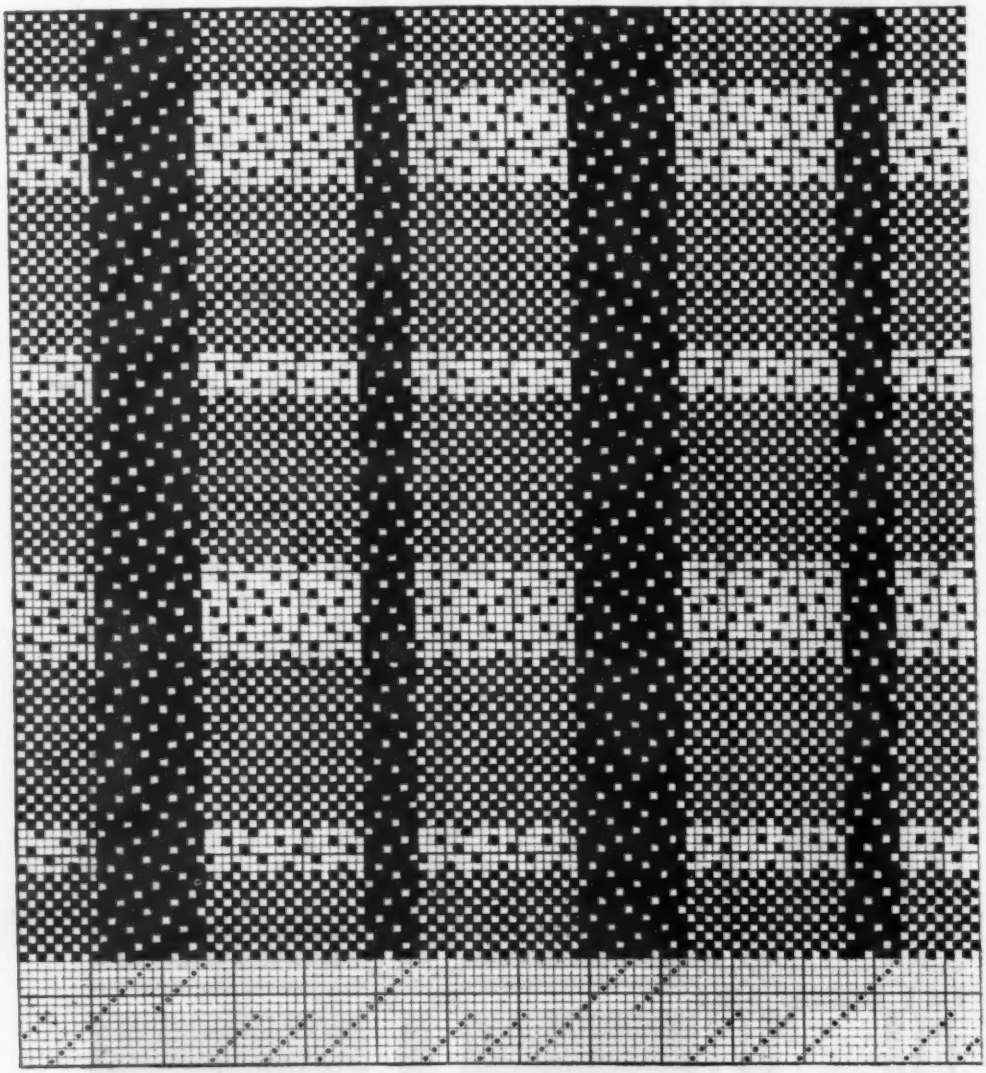


Fig. 22

the motive, in turn will result in a new weave repeating on 224 × 224.

With reference to changes in this motive, there are 4 different changes found and which in connection with the 5-leaf satin naturally will call for (4 × 5 =) 20 warp threads × 20 picks, etc., etc.

Diagram Fig. 19 in turn shows 5 different changes in the motive given, and which consequently in connection with the 5-leaf satin would call for a 25 harness fancy draw. Using 40 warp threads and 40 picks for each square in the motive, in turn will result in a repeat of the weave in (9 × 40 =) 360 warp threads × 360 picks in the woven fabric.

Diagram Fig. 20 shows us again a more simple motive calling in turn only for four different changes and consequently in connection with the 5-leaf satin for (4 × 5 =) 20 harness in the fancy draw. Using 15

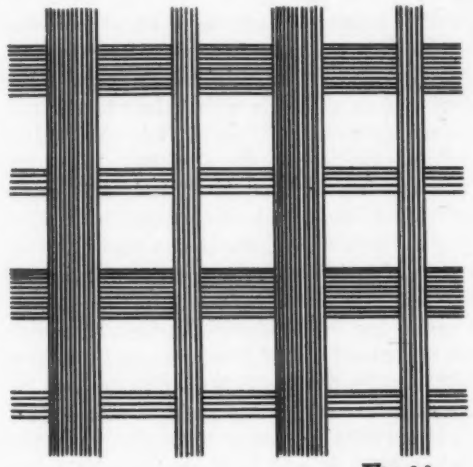


Fig. 23

warp threads and 15 picks of this 5-leaf satin (warp or filling effect as the case may require) for each square in the motive, in turn will result in a repeat of 255 warp threads × 255 picks for the complete design.

Diagram Fig. 21 shows us a fabric sketch calling for the combination of the four effects thus far referred to, viz: stripe effects, plain checker-board effects, fancy checker-board effects as well as figured effects, the complete affair calling for four different changes, and which naturally in connection with the 5-leaf satin (warp or filling effects, as the case may require) will call for (4 × 5 =) 20 harness, fancy draw only. If using the 8-leaf satin in place of the 5-leaf satin thus quoted, the number of harnesses required then would be (4 × 8 =) 32 harness fancy draw.

Before closing our lesson on the subject of these combination satin weaves, we will now refer to the last division previously quoted, i. e., combination effects and which will readily explain themselves by means of weave Fig. 22 and its fabric sketch Fig. 23.

This system of design refers naturally to dress good fabrics, weave Fig. 22 showing us a plain interwoven texture over checked with light and heavy satin stripes, both warp and filling ways, the foundation satin being the 6-leaf satin, warp and filling effect respectively; care being taken in connecting these two satins with the plain weave, in order to produce a sharp cut off where plain and satin join.

As will be readily understood, such structures require two beam work, one warp being for the warp threads interlacing with the satin weaves; and the second for the warp threads interlacing with the plain weave, the repeat of the complete weave (Fig. 22) being

Warp:

12 ends, 6-leaf satin, warp effect.
18 ends, plain.
6 ends, 6-leaf satin, warp effect.
18 ends, plain.

—

54 warp threads in repeat of dressing.

The filling in order to produce a sharp cut off between the two effects (plain and satin) in turn is arranged thus:

11 picks, 6-leaf satin, filling effect.
19 picks, plain.
5 picks, 5-leaf satin, filling effect.
10 picks, plain.

—

54 picks in repeat of design.

The slight change of one end difference between warp and filling satin (i. e., 12 vice versa 11 and 6 vice versa 5) had to be made in order to produce the perfect cut-off of the two threads where the two weaves join.

The weave, in connection with fancy drawing in draft given below in [·] type calls for 12 harness on the loom.

THE FINISHING OF COTTON GOODS.

(Continued from February.)

Following the lye or soda-boil comes the resin-boil, which consists in boiling the goods under operation in a resin soap solution.

A good recipe for preparing this boil is thus: After preparing the soda ash liquor of from 15° to 20° Tw., throw into it resin broken up in small pieces, and boil the liquor until the resin has all dissolved, adding afterwards as much more resin as the liquor will conveniently take up, and when then the resin soap liquor is ready for use. Do not use too much resin, since with an excess used, the proper white of the goods will suffer, the same being the case if too little is used, from 1 1/2 to 1 3/4 per cent. of the weight of the goods being about the right proportions, by what must be understood that 1 1/4 per cent. would be too little, and 2 per cent. too much. The amount of soda ash to use in connection with the liquor should be more than twice the amount of the resin—from 3 1/2 to 4 per cent. being a fair allowance, the duration of the boiling in connection with the resin boil varying from 7 to 12 hours, according to what construction of a kier is used.

After the lye and resin boil thus explained, the goods in turn are again thoroughly washed, and whereby the peculiar construction of the rollers and the use of beaters with this machine, the cloth is there effectually scoured.

Where goods are to be dyed, it frequently happens that they are then ready for this process, i. e., the goods are sent to the dye house, whereas in connection with more delicate colors, or with white goods, they are then submitted to the process of chloring or chemicking, i. e., the actual bleaching operation, i. e., the treatment of the goods with bleaching powder. In some instances the washing previously referred to is omitted and the goods passed from the lye or the resin-boil direct to this chemicking process.

All the operations until now practiced had for their purpose to obtain a cloth free from grease, and natural as well as mechanical impurities, however, still having a slight brownish color, which must be removed before the goods can be considered as bleached, to produce a good white being the aim of every careful bleacher.

This bleaching or chemicking solution is best prepared in a stone cistern supplied with a revolving stir. The bleaching powder (chloride of lime) and water are introduced into the cistern, and in this way a strong solution of the hypochloride prepared, which afterwards can be diluted to suit the requirements.

There is very little difficulty in making this bleaching liquor if exercising sufficient care to have the solution clear and free from undesirable particles, which if present in the liquor will settle on the cloth to be treated and in turn will produce minute holes in the latter; again they may over-bleach the goods and in which case they then will have the power to attract an excess of color provided the goods are dyed afterwards, and in turn lead to stains. For this reason permit the solution first to settle quite clear in the cistern where prepared, or what is still better yet, have it filtered before using.

Chemicking is best done in a cold state and with a weak solution of say 1/2° Tw. A warming of the liquor is not advisable for the fact that it increases the rapidity of the bleaching action on the cloth, in turn giving a chance for over-chloring, a feature which must be avoided for two reasons: It will tend to make the cloth tender as well as be the means for stains and patches in the dyeing, if such is the next operation, and for which reason it will be found advisable to rather run the goods twice through a weak liquor in the cold, in place of heating the liquor and in this way laying the foundation for imperfections to the fabric.

The goods are then passed through the bleaching solution and then between squeeze rolls to remove all excess of the liquor and to force the liquor into the pores of the cloth. The cloths then pass to bins where they are allowed to lay for several hours. During this contact the oxygen of the hypochloride attacks the brown coloring matter upon the fibres, as they are more easily oxidized than the cellulose which constitutes

the main part of the fibre. The carbonic acid of the air undoubtedly plays a certain part in the reaction, and hypochlorous acid is to a certain extent set free. During this contact the bleaching powder is nearly all decomposed.

While the goods are in the bin they should be covered with a damp sheet, taking care that they are not left piled too long, i. e., become dry, since if this should be the case, there is a chance for the goods to become tender, and for which reason it will be found advisable from time to time to moisten them with a little water. Pile them as loosely as possible in order that the air can get at them, a feature which will assist the process.

After chemicking, the goods should then pass through a dilute acid (either hypochloride or sulphuric acid may be used) for a second time, the process being technically known as the final or white-sour. The same has for its object to decompose any bleaching powder still remaining upon the goods, and render its chlorine available, to remove also all the lime from the goods, and finally to remove the material oxidized by the bleaching powder. Hydrochloric acid has the advantage over sulphuric acid in forming a more soluble salt of lime, having also a more solvent action upon any traces of iron and other metallic and oxide stains still remaining in the goods. However, it has the disadvantage of unpleasant work to the workmen on account of its fuming properties. The disadvantage of sulphuric acid is that traces of the bleaching powder, etc., etc., are liable to remain in the cloth, even after the most careful washing, in turn injuring the cloth when it is dried.

The scouring in the white-sour is done by passing the goods through an acid liquor, as previously referred to, at 2° Tw., piling them up for two or three hours and afterwards wash them thoroughly in order to remove the acids and lime salts from the goods. Running water should be employed, and it should be clear and free from dissolved organic matter and iron. The washing cannot be too carefully executed. The drying is done (1) in the case of very delicate goods by hanging them in dry rooms exposed to hot air and (2) upon cylinder drying machines, which, as will be readily understood, is the most economical way to dry them.

The chief evils in connection with bleaching are making the goods tender and spotting them, both of which, however, can be always more or less traced to carelessness upon the part of the party having the process in his charge.

Tender goods may be caused also by imperfect washing or even by drying at too high a temperature. Spotting is usually due to iron either in the chemicals or from contact with the kier or in the wash water. Suspended matter in the wash water also causes spots.

Very light fabrics such as laces, lace curtains, etc., and which as will be readily understood, cannot stand the continuous processes thus explained, must be submitted to a different bleaching process,* for example, some bleachers may steep these goods for an hour in a weak lime liquor, using about two pounds of lime to one hundred pounds of goods, boiling them afterwards in a kier for about eight hours and wash them in a washing machine supplied with dash wheels, i. e., large hollow wheels, the interior of which being divided into four compartments, and into which the goods are put, and the wheel caused to revolve while at the same time a current of water flows with some force in the interior of the wheel and thus washes the goods.

Fig. 7 shows the general construction of such a washing machine in which a indicates the wooden tank for holding the wash water, and which tank is placed from 12 to 24 inches below the floor level, according to the capacity of the machine, in order to bring the doors, b, conveniently low so that the material to be washed can be unloaded and loaded quickly and economically. c, d, e and f show the four compartments previously referred to. g indicates outwardly projecting pieces placed in each compartment of the cylinder in order to aid in keeping the goods in a loosened condition.

*See also bleaching with peroxides—as mentioned later on—for this purpose, i. e., a modern bleach.

To obtain a perfect circulation of the wash water through the goods, while the cylinder is revolving, i. e., passing through the bath, the copper sheets with which the compartments, cylinder heads and partitions are lined, are perforated. The material is loaded in the various compartments separately from the back of the machine, the unloading being done at its front and when the bottom partition of each compartment forms a table from which the stock is readily taken from the machine.

The construction of the compartments, as will be seen from the illustration, is such that the material in them is turned over at every revolution of the cylinder without any rolling motion, in turn preventing the stock from forming a mass, and in turn preventing a thorough washing.

After the goods are thus carefully washed, they are then again submitted to the kier,

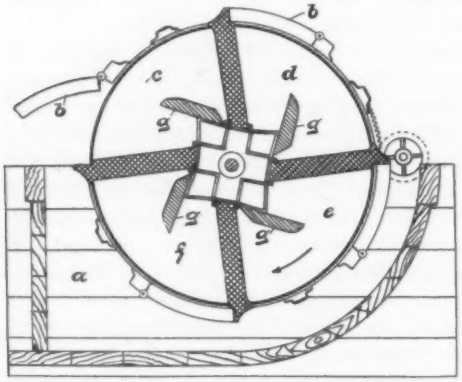


Fig. 7

and boiled again with soda ash, using about 8 per cent. of the latter for every 100 pounds of goods, giving them a boil of about 7 hours, after which they are again washed and the process followed up with a second boiling, lasting for about 8 hours with 5 per cent. ash and 4 per cent. soft soap for each 100 pounds of goods, after which they are again washed and entered in the chemick, and allowed to steep for about 2 hours, after which they are hydro extracted, steeped in sour of hydrochloric acid of about 1° Twaddle, washed again, hydro extracted, passed through a bluing liquor, hydro extracted again and in turn dried.

As will be readily understood, any of the processes of bleaching quoted throughout the article may be omitted or varied to suit different demands, different fabrics under operation, for the fact that an endless variety of fabrics require the process, varying from the coarsest cotton cloth possible to be made, to the finest delicate structure, and when naturally the treatment of one cannot be followed up with another style of fabric, i. e., must be varied to suit the particular case, the particular style of fabric to be treated.

Bleaching with peroxide is what we might call a modern way of bleaching. Although it may be a long time before this system of bleaching will come in universal use as the process of cotton bleaching, on account of the expense connected with it as well as the necessity of the invention of the proper machinery for carrying it on systematically at a low cost, still there are at present certain lines in cotton manufacturing where the qualities of peroxide-white as the bleaching process is of the greatest of advantage. Among the classes which are vastly benefited by being taken away from the rotting influence of the lime bleach are to be mentioned all products in which retention of strength is a prime necessity, such as laces, curtains, ropes, flimsy and frail fabrics, etc.; furthermore, those products which, besides strength, are to retain, and are more valuable according to the degree they retain, elasticity and softness, such as knit goods.

Another quality of the peroxide-white is advantageous to the latter class, e. g., the freedom of these goods which are to be worn next to the skin, from harmful chemicals, such as the lime treatment always leaves in the fibre.

We think these advantages are not sufficiently considered by the knit goods trade at large, possibly for the reason that no urgent public demand exists for goods having such qualities. This is due to the public being uninstructed and therefore knowing not what to demand, nor, when they ask for it, whether they actually receive it. Here appears to be a fine chance for "trade mark" goods and a campaign to the consuming public.

A trial of peroxide bleaching is not difficult nor expensive, and no excuse therefore exists for not becoming acquainted with the system and gauging its selling effect on the goods of the cotton manufacturer.

The apparatus required could not be simpler. It consists of wooden kettles arranged for heating up by means of a lead pipe under a perforated double bottom.

An output of one thousand pounds per day would not call for an expenditure of more than $100, while greater installations are proportionately cheaper. Test trials can be made in any small wooden vessel, such as a pail, or even in glass or enamel.

Of the peroxides, the most available is peroxide of sodium, for which there now is a large demand from the wool, silk and mixed goods bleacher.

The principle of peroxide bleaching is based on the oxidation of the natural coloring matter of the fibre and as soon as this is accomplished the peroxide influence stops; consequently there can be no damage to the goods by tendering the fibre, and close supervision, for fear of damage, is not called for.

As the bleach baths are made up in the kettle or machine (dyeing machine) in which the bleaching is to take place, the room for settling and storage tanks is saved.

By reason of the coloring matter being oxidized, a yellowing-up by time, exposure or washing is done away with, which should prove a boon to the stock room, jobber and dealer when goods are left on the shelf from one season to the other.

An educational campaign to the public, while always expensive, yet can be calculated to bring such immediate results that the outlay will be quickly covered by the demand for the article whose trade mark is known to guarantee strong goods with all vitality left therein; which will not go back in color and the wearing of which will not affect the tenderest skin.

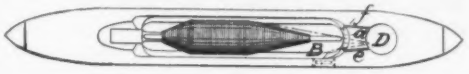
(To be continued.)

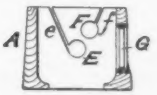
During the last five years the number of manufacturing establishments in New York State have increased from 35,957 to 37,194, representing a capital of $2,031,459,515.

AN AUTOMATICALLY THREADING SHUTTLE.

This is an English invention and, as the heading indicates, has for its object the threading of the yarn without suction, i. e., obviating any necessity on the part of the weaver of blowing the thread through its exit, or of applying the shuttle for the purpose of threading it to the mouth, i. e., sucking the thread through its exit from the shuttle.

Referring to the accompanying two illustrations, and which are a plan and a transverse section, respectively, the shuttle is constructed with a bridge-piece, a, in front of the shuttle-tongue, B, forming a large opening, D, in front of the bridge, a, to which the fingers of the weaver have ready





access. The opening, D, either passes from top to bottom of the shuttle, or it extends from the top only part way through the shuttle.

The shuttle-tongue, B, and the bridge, a, are so placed that the former projects forward into close proximity with the bridge and consequently prevents any liability of ballooning of the yarn off the point of the shuttle-tongue.

In the bridge, two holes, E and F, are cut, the same joining the interior of the shuttle with the opening, D, in the point for the passage of the yarn. The hole, E, is immediately opposite the end of the shuttle-tongue, from which the yarn is delivered to it, and the hole, F, is placed more or less inclined in any other convenient position, both holes being fitted with a pot eye to prevent the yarn from cutting into the wood.

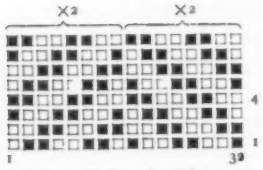
At one side of the bridge an inclined slit, e, is cut from the top of the shuttle into the hole, E, and another inclined slit, f, into the hole, F, by means of which the yarn as com-

ing from the cop can be readily passed by the weaver into the hole, E, and through it into the opening, D, and back again into the interior of the shuttle.

A hole, G, is also cut in the side of the shuttle, and through which the yarn can be easily pushed to the outside by the finger of the weaver, no blowing or suction of any sort on his part being required.

FOREIGN NOVELTIES.

Woolen Cheviot Suiting.



Complete Weave.
Repeat 32×4.

Warp—2816 ends, 8 harness, fancy draw.

Reed—20×2=70 inches wide in loom.

Dress—

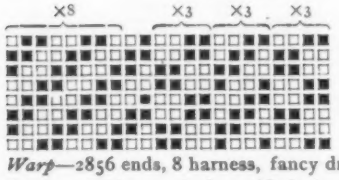
2 ends, 2 ply, 5 run, woolen cheviot yarn, blue and white twist.
6 ends, 2 ply, 5 run, woolen cheviot yarn, medium gray and white twist.
2 ends, 2 ply, 5 run, woolen cheviot yarn, drab and yellow twist.
54 ends, 2 ply, 5 run, woolen cheviot yarn, medium gray and white twist.

64 ends, repeat of pattern.

Filling—40 picks per inch, all 3 run woolen cheviot yarn black.

Finish—Cheviot finish, 56 inches wide.

Cheviot Suiting.



Complete Weave.
Repeat 102×4.

Warp—2856 ends, 8 harness, fancy draw.

Reed—20½×2=70 inches wide in loom.

Dress—

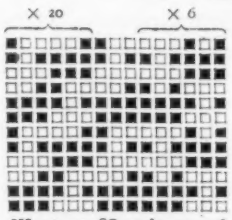
1 end, 2/36s worsted cheviot, red and black twist. .....= 1 end
1 end, 3½ run, woolen cheviot, gray mix ..... = 1 end
2 ends, 3½ run, woolen cheviot, black..... } × 10 = 40 ends
2 ends, 3½ run, woolen cheviot, gray mix . ..... }
2 ends, 3½ run, woolen cheviot, black .....= 2 ends
1 end, 2/18s worsted cheviot, green .....= 1 end
2 ends, 3½ run, woolen cheviot, black .....= 2 ends
1 end, 2/36s worsted cheviot, yellow and black twist. .= 1 end
2 ends, 3½ run, woolen cheviot, black .....= 2 ends
1 end, 2/18s worsted cheviot, green ....= 1 end
1 end, 3½ run, woolen cheviot, black ..... } × 23 = 46 ends
1 end, 3½ run, woolen cheviot, gray mix..... }
1 end, 2/36s worsted cheviot, red and black twist.....= 1 end
1 end, 3½ run, woolen cheviot, dark green. ..... } × 2 = 4 ends
1 end, 3½ run,woolen cheviot, black..... }

Repeat of pattern: 102 ends

Filling—40 picks per inch, all 3½ run woolen cheviot yarn.

Finish—Cheviot finish, 56 inches wide.

Worsted Melton Suiting.



Complete Weave,
Repeat 159 × 6.

Warp—5088 ends, 12, 16 or 18 harness, fancy draw.

Reed—12½ × 6 = 68 inches wide in loom.

Dress—

16 sections @ 318 ends, or 2 patterns to one section:
1 end, 2/48's worsted, green mix..... }
1 end, 4¼ run woolen yarn, green mix.. } × 18.....= 54 ends
1 end, 2/48's worsted, green mix..... }
3 ends, 2/48s worsted, black and white twist, (hard twist) .....= 3 ends
1 end, 2/48's worsted, royal blue..... }
1 end, 2 fold, 2/48's worsted, royal blue . } × 4.....= 12 ends
1 end, 2/48's worsted, royal blue ..... }
3 ends, 2/48's worsted, black and white twist, (hard twist) .....= 3 ends
1 end, 2/48's worsted, green mix ..... }
1 end, 4¼ run woolen yarn, green mix .. } × 29.....= 87 ends
1 end, 2/48's worsted, green mix ..... }

Repeat of pattern: 159 ends

Filling—75 picks per inch, arranged thus:
2 picks, 2/48's worsted, dark violet.
1 pick, 4¼ run woolen yarn, dark violet.
3 picks, in repeat of pattern.

Finish—Worsted melton finish, 56 inches wide, 3% take up in length during finishing.

Calculations as to Amount of Material Required—

10% take up of warp during weaving:
5088 = 5653 and
5653 ÷ 159 (pattern) = 35.554 constant
35.554 × 6 = 213.324 = 0.254 oz. 2/48's worsted, black and white.
35.554 × 4 = 142.216 = 0.388 oz. 2 fold, 2/48's worsted, royal blue.
35.554 × 94 = 3342.076 = 3.978 oz. 2/48's worsted, green mix.
35.554 × 47 = 1671.038 = 3.932 oz. 4¼ run, green mix.
35.554 × 8 = 284.432 = 0.338 oz. 2/48's worsted, royal blue.

8.840 oz. weight of warp.

75 picks, 68 inches wide = 5100 yards ÷ 3 = 1700
3400 of 2/48's worsted, dark violet..... = 4.048 oz. per yard
1700 of 4¼ run, dark violet..... = 4. oz. per yard

8.048 oz. filling

Warp— 8.840
Filling— 8.048

16.888 oz. weight of flannel from loom
+ .5 oz. 3% take up at finishing

17.388
— 2.607 oz. loss in finishing (15%)

14.781 oz. = 14¾ oz. finished weight (exclusive selvage).

Worsted Suiting.

Complete Weave. Repeat 164×4.

Warp—6238 ends—8 or 16 harness, fancy draw.

Reed—15½ × 6 = 66 inches wide in loom.

Dress—19 sections of 328 ends each, or two patterns in one section.

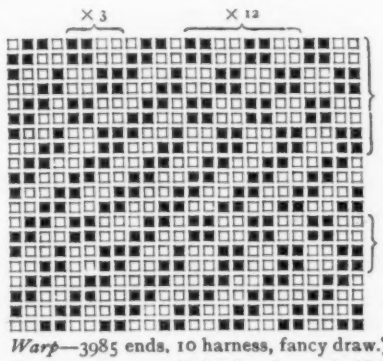
34 ends, 2/32's worsted, dark slate = 34 ends
2 ends, 2/48's worsted, black and red twist = 2 ends
2 ends, 2/32's worsted, dark slate = 2 ends
2 ends, 2/48's worsted, black and green twist = 2 ends
2 ends, 2/32's worsted, dark slate = 2 ends
2 ends, 2/48's worsted, black and blue twist = 2 ends
2 ends, 2/32's worsted, dark slate = 2 ends
2 ends, 2/48's worsted, black and green twist = 2 ends
2 ends, 2/32's worsted, dark slate = 2 ends
2 ends, 2/48's worsted, black and red twist = 2 ends
34 ends, 2/32's worsted, dark slate = 34 ends
6 ends, 2/32's worsted, black = 6 ends
30 ends, 2/32's worsted, dark slate } × 2 = 72 ends
6 ends, 2/32's worsted, black }

Repeat of pattern: 164 ends

Filling—48 picks per inch, 2/32's worsted, black.

Finish—Worsted finish, 56 inches wide.

Worsted Suiting.



Complete Weave.
120 × 164.

Warp—3985 ends, 10 harness, fancy draw.

Reed—30 × 2; split basket by reed, 66 inches wide in loom.

Dress—

7 ends, 2/40's worsted, dark blue = 7 ends
1 end, 2/60's worsted, blue-green } × 2 = 4 ends
1 end, 2/40's worsted, dark blue }
1 end, 2/60's worsted, blue-green = 1 end
39 ends, 2/40's worsted, dark blue = 30 ends
1 end, 2/40's worsted, dark green } ×2 = 4 ends } ×2 = 32 ends
1 end, 2/40's worsted, dark blue }
1 end, 2/40's worsted, dark green = 1 end }
11 ends, 2/40's worsted, dark blue = 11 ends }
1 end, 2/40's worsted, dark green } × 2 = 4 ends
1 end, 2/40's worsted, dark blue }
1 end, 2/40's worsted, dark green = 1 end
32 ends, 2/40's worsted, dark blue = 32 ends

Repeat of pattern: 120 ends

Filling—62 picks per inch, arranged thus:

8 picks, 2/40's worsted, dark blue = 8 picks
1 pick, 2/60's worsted, blue-green } × 2 = 4 picks
1 pick, 2/40's worsted, dark blue }
1 pick, 2/60's worsted, blue-green = 1 pick
61 picks, 2/40's worsted, dark blue = 61 picks
1 pick, 2/40's worsted, dark green } ×2 = 4 picks } × 2 = 32 picks
1 pick, 2/40's worsted, dark blue }
1 pick, 2/40's worsted, dark green = 1 pick }
11 picks, 2/40's worsted, dark blue = 11 picks }
1 pick, 2/40's worsted, dark green } × 2 = 4 picks
1 pick, 2/40's worsted, dark blue }
1 pick, 2/40's worsted, dark green = 1 pick
53 picks, 2/40's worsted, dark blue = 53 picks

Repeat of pattern: 164 picks

Finish—Worsted finish, 56 inches wide.

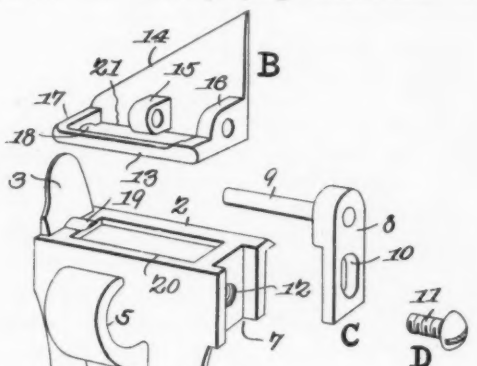
PARKER'S ADJUSTABLE SPOOLER GUIDE.

There are two main objects aimed at in the construction of this spooler-guide, viz:

First, that the passage of knotty or mote bearing threads through the guide and thus onto its mate spool is prevented, and

Second, that the guide is what we term adjustable, i. e., that it can be set so as to fit any count of thread to be handled; the new guide being besides a duplex cleaning affair (possessing duplex yarn rests and yarn knives) hence accomplishing a thorough cleaning of the yarn as is brought into contact with it.

In order to be able to give a proper description of the construction of this spooler guide, the accompanying illustration is



given, the same showing separated in outline perspective, the construction of the different parts said guide is composed of.

When the guide is assembled, part B is placed upon part A, both parts being held in place by means of pin 9 of part C, fitting into the orifices of lugs 15 and 16 of part B, screw D as fitting into the threaded orifice 12 of part A, in turn uniting parts A, B and C into one device, i. e., the new spooler guide complete.

With reference to the latter, numeral of reference 1 is the base of the guide and 2 the yarn rest disposed at right angles to the former; 3 is the yarn guide, disposed in turn again at right angles to the yarn rest, 2; all

three parts thus referred to being preferably cast integral.

The base, 1, carries a clip, 4, for engaging in its hooked portion, 5, the supporting rail of the spooler (not shown) and being secured thereto by a screw, 6, the head of which (not shown) is disposed against the inner side of the base, 1, and is movable in a slot (not to be seen) so as to permit the base to be adjusted as the case may call for.

The rear end of the yarn-rest, 2, is provided with a vertical groove, 7, for carrying in it casting, 8, as has secured to it the arm, 9, said casting, 8, being provided at its lower extension with an elongated orifice, 10, through which passes screw, 11, that engages the threaded orifice, 12, in the end of the yarn-rest, 2, and thereby holds the casting, 8, at any desired adjustment relatively to the rest, 2.

The arm, 9, by means of its assembling, as previously referred to, supports a yarn-knife, 13, having combined with it an inclined yarn-guide, 14. Projecting from one face of the latter are the two orificed lugs, 15 and 16, that are holding the arm, 9, as previously explained.

Yarn-knife, 13, is combined with the outer end of the lug, 16, and connected with the guide, 14, at its end opposite to lug, 16, by arm, 17, the under side of which is provided with a depression, 18, which in conjunction with projection, 19, on the upper side of the yarn-rest, 2, constitutes a yarn-gate, on account of the member, 19, projecting inward beyond the inner face of the arm, 17, and consequently prevents the yarn from working out from under the knife when once placed upon the yarn-rest, 2.

Both the yarn-knife, 13, and yarn-rest, 2, are hollow, what in turn will permit the escape of any motes or other impurities separated from the yarn from the guide, i. e., from the spooler.

Double cleaning process:

The upper edge, 20, of the base, 1, is arranged in the same plane as the yarn-rest, 2, and consequently constitutes a supplemental yarn-rest, the same being also true of the lower edge, 21, of the yarn-guide, 14, which in turn forms a second yarn-knife, so that in the operation of the device the yarn is subjected to two scraping or cleaning actions, which canot help but remove any motes, etc., from the yarn during the spooling process.

The thread-guide, 3, is loosely mounted upon the arm and consequently will rock freely and for this reason yield to the passage of the yarn; however, should a knot or large mote contact with the front yarn-knife, 13, the rear knife, 21, will be forced down upon the yarn-rest, 2, in turn preventing the passing of the knot beyond the last-named rest.

WOOL AND HAIR.

(Continued from February.)

The fibre varies in diameter, the delicate Saxon merino at present producing what is acknowledged as the finest wool in the world, the diameter of these fibres being 0.003 inch, with about 6,000 scales per inch. The fibres of fine wool grow very closely together upon the skin. The pure merino has from 40,000 to 48,000 fibres to a single square inch, while coarse wool breeds contain only from 5,000 to 6,000 to the square inch.

Soundness of fibre indicates health. It is determined by pulling a few fibres out of a lock of wool, grasping them at their ends with the thumb and finger of both hands, and when a steady, hard pull will soon show weakness in them, provided any exists. Weakness of the staple may or may not prove a barrier to the use of a wool under consideration, it all depending upon the extent of this defect and whether the material is destined for warp, combing or filling yarn.

Lustrous wool is long and strong, and varies considerably in the different breeds of sheep, straight, smooth, stiff wool having more lustre than curly merino wool. The amount of lustre of the wool depends partly upon the internal structure of the fibre, but chiefly upon the varying arrangement and transparency of the scales on the surface of the fibre. Some classes of wool are characterized by the lustre of their fibres and in connection with such wool, its presence is a sure indication of a healthy fleece and a good guarantee of its working qualities.

Old sheep usually lose the power of pro-

ducing the best wool, and as a rule, the wool of marshy and stormy localities is poor, though in one case the wool of Shetland is famous for its quality, however, this is caused by the fact that in this case the breed has remained uncontaminated with inferior breeds.

The wave of the crimp or curl on some wool varies up to 32 in an inch, and is caused by the fact that as soon as the point of the fibre has protruded through the skin of the animal, a series of growths take place. One side grows faster than the other, and what causes this wave of the crimp, or curl to the fibre. There prevails a popular belief among manufacturers and dealers in wool, that the fineness in the crimp corresponds in all cases with fineness in the fibre, and while there are more or less exceptions to this belief to be found, yet in an average taken, the same is not wholly unjustifiable. Such a relation does exist in very many instances, but it is by no means universal, and therefore cannot be accepted as a rule for determining the fineness of the fibre.

The instrument most frequently used for counting the crimps in a given length of fibre (one inch or parts of an inch) consists of a series of steel plates attached to a brass disk. Each plate is notched on the edge with a number of notches for a given distance, which corresponds with the average number of crimps found in the same distance in the fibre of wools of the different grades. Grasping the instrument by a small knob in the centre by one hand, and with a strong magnifying glass in the other, each of the notched plates is successively placed over the sample under examination. The plate in which the notches correspond with the crimps of the fibre, thus readily indicates the number of crimps per inch. As a rule, the coarser fibres have fewer crimps per inch than the finer ones, yet the crimp of the fibre cannot always be accepted as a guide of the absolute degree of fineness. This can be seen by making a few comparisons; and notwithstanding considerable importance is attached to it among the breeders, and as it is often used by dealers and graders in making their classifications based upon fineness, its true relation has been thoroughly recognized by those who have made a careful scientific examination of the staple.

The length of the wave in the crimp of the fibre thus cannot be accepted as a reliable indication of fineness, and other means must be adopted for determining this latter quality, and concerning which there has been a marked demand for information. Distinction in the fineness of the fibre may be determined after practice or experience by sight and touch, but classifications made in this way have given rise to perplexing disputes because of the naturally wide variations of individual appreciation and judgment. The many systems of measurements devised and applied at different periods among the German and French investigators clearly illustrate the difficulty of arriving at satisfactory results in this work, even by methods other than those just indicated. The principal difficulty consists in the fact that the wool fibres are not exactly cylindrical, but that their sections generally are of an oval or irregular shape, and the measurements would vary accordingly to positions of fibres, when measurements are taken. The different systems adopted in Europe for ascertaining the fineness of the fibre are very numerous, each one has some merit, as all have been more or less extensively employed there. These systems are fully described in J. Bohm's "Wollkunde," for which we refer the reader for more detailed information concerning them and where he classes the systems and instruments as those requiring and those not requiring the use of the microscope. Each division he again subdivides in the process of measuring single fibres, or the process of measuring several fibres at the same time.

According to Dr. Bowman, the breaking strain of human hair in grains is 1,641; of mohair, 586; of Lincoln wool, 502; of Leicester wool, 473. In Southdown wool, however, it is only 86; in Australian merino 50; and in Saxony merino, 39. The average diameter of the fibre after breaking, expressed in decimals of an inch, was found to be: Human hair, 0.0027; mohair, 0.00138; Lincoln wool, 0.00159; Leicester wool, 0.00138; Southdown wool, 0.00081; Australian merino, 0.00035; and that of Saxony

merino, 0.000224. In elasticity, on the other hand, the Australian wool is nearer that of human hair than that of the Lincoln.

Good and Bad Wool. As all fine fleeces contain some coarse wool, and all fleeces graded as coarse wool contain some fine wool we herewith mention rules governing both qualities. A fine or valuable wool to the manufacturer must have the following characteristic points: 1st, fineness, with close ground; 2d, pureness; 3d, straight-haired when broken by drawing; 4th, elasticity; 5th, staple not too long (except if wanted for combing); 6th, color; 7th, defined coarse portions; 8th, tenacity. The points which will make wool poor in the eyes of the manufacturer are: 1st, thin, grounded, toppy, curly-haired, and if in a sorted state a small amount that is very fine; 2d, tender staple; 3d, little or no elasticity; 4th, many dead white hairs; 5th, very yolky.

Length of Staple. According to their length, technically, length of staple, wools are graded in two principal grades known as long-stapled (combing or delaine) wools and short-stapled (clothing or carding) wools. Until late years the long-stapled wools were used for the manufacture of worsted yarns, but which is not essential any more, since the machinery for the manufacture of these yarns is at present such that short-stapled wools can also be made into worsted. Short-stapled wools are generally used for the manufacture of woolen yarns, but as previously mentioned, some are also spun in worsted yarns. However, to the manufacturer of worsted yarns the length of the staple is always a point of interest, since it not only contributes to the strength of the yarn, but at the same time will result in less noil and consequently more yarn out of a given amount of wool.

The classification of the short stapled, or merino, or clothing, or carding wools, as they are variously called is: picklock, XXX, XX, X, one-half blood, three-eighths blood and one-fourth blood, according to quantity and fineness.

Picklock is an extremely fine fibre, of which a very little is found in the remaining Saxony flocks of breeders in Western Pennsylvania. Most of these breeders have modified their flocks to obtain heavier fleeces of longer fibre, bringing much more money. There is also very little of the XXX grade, which is only exceeded in fineness by the purest breeding of Saxony merinos.

The mass of high-grade clothing wool is of the XX and X grades. The lower grades are made by dealers according to fineness and quality, without a knowledge (which would be impossible to attain) of the precise fraction of merino blood of the sheep producing them.

The combing wools are of two classes, viz: those of the English mutton breeds, or at least not of merino origin, and secondly the merino division of combing wools, which in turn are again classified in three grades—fine, the finest of long staple; medium, not quite so fine, and low, of combing length and a little finer than the combing wool of mutton breeds. These are classed as three-eighths blood, one-fourth blood, common and braid, the last being the long and lustrous wools of the Lincolns, and also of Leicesters and Cotswolds.

Wool as coming from the sheeps' back, besides the wool fibre contains foreign matter and which are best divided into four parts, viz:

a: Suint, which includes everything that is soluble in water, and consists chiefly of the potassium salts of certain organic acids, and which are soluble in water.

b: Yolk, which includes substances insoluble in water, but soluble in ether or spirits, and consists for the most part of cholesterine, together with insocholesterine, and also the clycerides of certain organic acids. In order to ascertain the amount of yolk in wool, extract the dried wool with ether, after which wash the ethereal solution with water, so as to remove the potassium salts, since they are slightly soluble in ether. Next evaporate the washed ethereal solution to dryness and weigh the fatty residue, the weight in turn representing the amount of yolk present. In many instances suint and yolk are considered under one item so as to simplifly classification.

c: Mechanical impurities, such as burrs, sand, dirt, etc.

d: Moisture; wool is very hygroscopic,

that is, it will absorb a considerable amount of water without feeling damp. The amount of moisture present depends on the conditions of the atmosphere where the wool is stored. In a warm, dry room it will contain as low as 8 to 12 per cent. of moisture, and in a damp atmosphere it may contain as high as 30 to 50 per cent. The amount of moisture in unwashed wool varies with the amount of fatty matter it contains; the more fatty matter the less moisture; moisture in wool as it comes from the sheep's back varying from 6 to 24 per cent., and for which reason attention should be paid that no excess of it is present, since wool loaded with excess of moisture means loss to the buyer. This hygroscopic nature of wool renders it very desirable that those trading with it should know exactly its condition in this respect at the time of buying and selling. To ascertain the exact amount of moisture present in a lot of wool, take a sample of it, weigh it, and then subject it for half an hour to a temperature of 212° F. The wool is then weighed and the procedure repeated until the latter weight is constant. This weight subtracted from the original weight gives the moisture in the sample and from which the percentage can be readily ascertained. No standard of moisture for wool in grease exists, since the amount of moisture in unwashed wool varies with the amount of fatty matter it contains; the more fatty matter, the less moisture; but with reference to scoured wools, the permissible limit of moisture in wool is: 17 per cent. measured with perfectly dry wool as a basis for clothing wool; and 18 1/4 per cent. measured with perfectly dry wool as a basis for combing wools. If wool is heated to 212° F., it becomes plastic, and when in this condition it can be made to assume any shape, which it retains upon cooling.

Burrs and Burry Wool. Burr is a general term given to the fruits of certain plants of the natural orders compositae and leguminosae. These burr weeds have spiral or conical seed-pods covered with densely-set horny spines, which readily hook into the woolly covering on the sheep's back and are a prominent adjunct to wools raised in South America.

Wool should be obtained as free from burrs as possible, since they adhere to the fleece of the sheep, and cause much trouble in the different processes of manufacturing. Burr-pickers are employed to remove them, but the most effectual way to remove the spiral burr is by carbonization.

The wool of diseased sheep, or of such as have died from disease, as will be readily understood, is inferior in quality to wool taken from a healthy animal of the same breed. Wool taken from a diseased sheep will also behave differently in dyeing than wool of a healthy sheep, the former not taking as full a color as the latter.

The wool of slaughtered sheep is removed from the skin either by cutting or by a chemical process, steeping, in the latter case, the hides for a time in lime, or a dilute solution of sodium sulphide and when the fibres become sufficiently loosened at their roots so that they can be readily removed. The first process (to remove the pelt by cutting) produces a better fibre, although more troublesome, but the wool does not suffer in its quality, whereas the chemical process more or less injures the fibre. Wool obtained by the chemical process, generally known as pulled wool, is inferior in quality to that of shorn wool.

With such an apparently simple fibre as wool, it thus will be seen that considerable discrimination and attention are required to detect the variations of excellence in the different kinds. Sheep raisers have to consider whether they are to raise their flocks more particularly for the quality of the fibre or for the quality of the mutton. As will be readily understood, only one point can be gained successfully, and this certainly at the expense of the other, a feature seen by the fact that in olden days Great Britain was held in high repute for its wool, but that the importation of foreign textiles lent itself to the sacrifice of the fleece in order to improve mutton raising, hence to the decline of British wool. The study of the variations of the fibres will through time throw light on the cause which produces them, and those who are engaged in the culture of sheep will thus be enabled to secure still greater uniformity in the character of the fleece, a feature which

will be of the greatest benefit to those mills which manufacture the better class of woolen goods.

AN IMPROVED PICKER-STICK CONNECTION.

The object of the new device is to prevent breaking of the picker stick during the operation of the loom, by providing an improved connection between sweep stick and picker stick.

To understand the construction and operation of the device more readily, the accompanying illustrations are given, of which Fig.

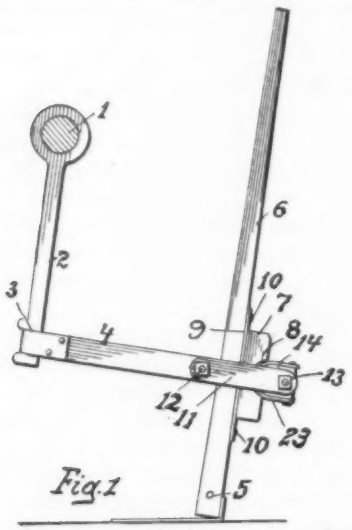


Fig. 1

1 shows us an elevation of the improved connections applied to that part of the loom to which it more particularly refers, Fig. 2 being an enlarged (as compared to Fig. 1) view in detail of the cushion arrangement, used in connection with the new device, said cushion arrangement being the most important member of the latter.

A description of the construction and operation of the new device is best given by quoting numerals of references as used in connection with our illustrations and of which 1 refers to the usual picker-arm shaft, carrying picker-arm, 2, which in turn by means of a strap, 3, carries the sweep-stick, 4, as is clearly shown in connection with diagram Fig. 1. The picker-stick, 6, is hinged to the framing of the loom in the usual manner by means of a fulcrum indicated by numeral 5.

A block, 7, containing a groove, 8, in turn is secured to a cushion strap, 9, the latter being held to the picker stick as shown at 10, said strap, 9, serving to cushion the impact of the picker-stick, 6, when the loom is running.

A strip of leather or otherwise, 11, is mounted on either side to the sweep-stick, 4 (only one of these strips, 11, can be shown in our illustration, since its mate strip is situated in back of it on the other side of the stick) by means of bolt, 12. Said strips, 11, on its outer end, are connected by means of bolt, 13, and carry between each other, the new cushioning device previously referred to, and which consists of a wooden

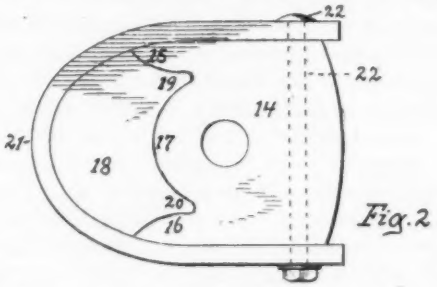


Fig. 2

block, 14, of a peculiar shape as shown in detailed illustration Fig. 2, i. e., comprising ears, 15-16, and a curved portion, 17.

Between the ears, 15-16, of the wooden block, 14, a rubber cushion, 18, provided with tongues, 19-20, is inserted, the latter entering its mate recesses of block, 14, respectively.

Around the cushion, 18, and the top and bottom of block, 14, in turn is fitted a strap, 21, being secured to the latter by means of bolt, 22, and consequently holds the rubber cushion, 18, in proper position onto the wooden block, 14.

This cushioning device as thus described, and illustrated in detail in connection with diagram Fig. 2, in turn is fitted into the groove 8 (see Fig. 1 again) of the block, 7, and where it serves to cushion the connection between picker-stick, 6, and picker-arm, 2, with the consequent advantage of prolonging the life of the picker-stick by less wear and tear on it.

CORRESPONDENCE AND NOTES

Upon Textile Topics At Home and Abroad.

CONDITIONING COTTON YARN.

[The manager of one of the largest cotton spinning plants in Lancashire writes as follows to our correspondent, M. A. Cooper. Ed.]

"Rochdale, Feb. 11, 1907.

"Dear Sir: The undersigned was much interested in your very practical article on 'Conditioning Cotton Yarn' in a recent issue. The part referring to the conditioning on the winding frame deserves special attention. Anyone who has had experience with the trouble caused by conditioning on the bobbin would be only too glad to get rid of the hundred and one difficulties that arise if at the same time the moisture could be got into the yarn.

"Do you know of the system you mention having been tried, and if so with what results? Is the yarn as smart as when conditioned by dipping? Is there not a risk of mildew, and lastly can as much moisture be carried as when dipping is resorted to?

"Apologizing for troubling you, we are,

"Yours respectfully,

——— ——— Ltd."

To this Mr. Cooper answers as follows:

"There is not the slightest danger of mildew after the warps have been conditioned by the method explained in my article in the November issue, as the moisture is evenly distributed, every thread getting its exact proportion, and being forced into the yarn by pressure on the damp flannel-covered roller and not put on in such a haphazard way as dipping, where the outer portions of the yarn get perhaps 20 per cent. of water and the inner portions practically none at all. Again in dipping there is no regularity in the amount of water going into the yarn, whereas under the conditioning system the amount of water is regulated by the speed at which the damp roller is revolved, and from 7 to 8 per cent. of water (or more if necessary) can be put into the yarn without danger of mildew. We used to get orders for warps to be ready for delivery when required and have had them lying in stock as long as twelve months.

"The only danger of mildew is in allowing the small quantity of yarn which always remains on the warping bobbin to stay on too long, but this is easily prevented by having all the pieces of bobbins run off completely bare at regular intervals; by having different colors of bobbins for different counts prevents mixed counts in running off these pieces. In fact all these little, though important, details are only overcome by experience and a good, sound, practical system.

"The correspondent also speaks of the appearance of the warps after being conditioned as compared with the 'smartness' after being dipped. My previous remarks about the damp being evenly distributed holds equally good in maintaining the smartness or appearance of the yarn, which could be affected detrimentally in this respect only by putting in an altogether abnormal amount of moisture, which would no doubt not only make the yarn appear dead and heavy, but would be an incentive to mildew. But no practical man would knowingly put in more than a reasonable amount of damp, if he did he would be 'hoist with his own petard,' by having the warps returned for containing excess moisture.

"One of the difficulties of this system of conditioning is the effect of the moisture on the heads of the warper bobbins and is probably a difficulty our correspondent has not yet experienced, but if he decides to give the system an extended trial he will find that the heads of the bobbins will split off where they are glued on, as the moisture eventually softens the glue until it is useless. To ob-

viate this trouble I had all our warper bobbins made with a metal binder so the water did not affect them and consequently prevented the heads breaking off. I found the metal binder an improvement in another way as it prevented the edge or rim of the bobbins getting rough from constant wear and having a tendency to break the threads in the operation of winding or warping. This metal binder was a source of strength to the bobbin and though the initial cost was slightly more than for the ordinary bobbin, the increase in the length of time the bobbin lasted and the steady running more than repaid the extra outlay, independent of the necessity for having a bobbin made on this principle, in order to resist the action of the moisture on the heads.

"Another source of trouble will be to keep every thread touching the dampening roller to the same extent, otherwise there will be irregularity in the amount of damp in the threads. This is detrimental to the yarn, as a thread that has been damped, running alongside a perfectly dry or almost dry thread, will not have the same tension or drag on it that the dry thread has and the latter is receiving all the 'punishment.' To ensure every thread getting on to the dampening roller a glass rod is fixed in front of the trough. These rods are made in short lengths, fixed in adjustable bearings, and by keeping the two lengths of rods exactly level with each other all the threads will touch the roller to the same extent and consequently obtain the same amount of moisture. Iron, steel, or brass rods are not satisfactory for this purpose as the continually running thread eventually cuts into the metal and causes a difference in the height of the threads.

"By close observation one will soon be able to overcome all these little difficulties and the matter is well worth time and trouble, as in my opinion it is the most satisfactory method of conditioning cotton yarn. We experimented a considerable time before adopting this system and I could enumerate at least half a dozen different plans that were worked out and rejected before arriving at the goal we were aiming for, as much moisture can be retained in the yarn by this method as by dipping and it will be more regularly distributed."

THE CARE OF DRAWING-IN FRICTIONS.

BY JOHN STANHOPE.

In adjusting a drawing-in friction the first thing is to see that the friction is perfectly loose while the carriage is running out and while backing off. As soon as the backing-off is completed the friction dish should drop into action and at the same time the holding-out catch should rise. The friction dish should move out of action when the carriage reaches the back stops. If the friction or the parts connected with it are not adjusted carefully there are sure to be smash-ups and no end of trouble. If the friction dish should be set too deep so that it binds during the outward run it would cause the carriage to slip off the holding-out catch and make kinks in the yarn. Sometimes the carriage will run in before the backing-off takes place and all the ends will be bunched together because no winding can be done if backing-off does not take place. If the carriage did manage to reach and remain on the holding-out catch the trouble would be worse, for as soon as the cam changed the drawing-in friction dish would fall a little lower and it would then have a sufficient hold to pull the carriage and this would break the holding-out catch.

It is very important when setting a drawing-in friction to see that a sufficient sweep of the holding-out catch is maintained, for the drawing-in friction and the holding-out catch are connected together. It is a practice among mule spinners to set the drawing-in friction dish deep, so they can get a high rate of speed during winding. In my opinion this is a very bad practice, for with a high rate of speed there will be several bad results: the ends will break down and wind around other ends; the cops will not shape well; they will have bad noses; numerous breakages will take place with the drawing-up parts; the check and scroll bands will not last long on account of the high tension at which they must be kept to prevent the carriage from striking the buffers too hard.

When the speed of the engine is irregular or the engine is stopped at noon or night the carriage will not strike the buffers because the bands are too tight. Striking the buffers too hard or not striking them at all means cut yarn in both cases. I know of one mill where the second hand walks around with a check and scroll band tied to his waist ever ready to jump in and put one on. No attention is paid to the high speed of the taking-in vertical shaft as the manager thinks that to decrease the speed would mean a loss of production. This extra work of the second hand, the time lost while new bands are being put on, and the cost of the scroll banding count for nothing in this mill. I also know of several mills where the mules run at so high a speed that it is necessary to attach a piece of chain to the end of the check band which is made fast to the end of the scroll. It is always that end of the band that breaks. When the drawing-in friction is out of order there is a great loss of production and there is much bad work as a result of the irregular winding.

So far I have dealt only with the high speed of the carriage when winding, but the evil is the same with slow speed, loss of production and irregular winding. Whenever there is irregular winding there is bad work. I have sometimes worked on mules with an old friction or one that was worn out or thick with oil and grease, so that I often had to help the carriage in by pushing at it just after doffing. A drawing-in friction that is about worn out ought to be replaced at once. A friction that won't pull the carriage in at a regular speed or one that varies in its action ought to be taken out, put in a lathe and skinned up; that is, the leather scraped off and made free from dirt and oil. To do this properly the leather should be scraped off with a sharp-edged tool; great care should be taken that the leather is scraped all the way across without affecting the conical shape of the friction. Frictions that require skinning heat very much and have a tendency to stick to the friction dish. I have often seen overseers, spinners, and fixers scrape the leather as far as they could get into the friction dish with a piece of glass, a knife, or a file. This is about the worst thing that could be done to frictions, as it rounds them off at the bottom, as shown at PP, Fig. 1, instead of leaving them as shown at OO, Fig. 2. Thousands of frictions are ruined by being repeatedly scraped.

Another common practice among mule spinners when frictions slip is to put a little lime or some kind of liquid on them to burn off the dirt and grease. This would do very well if the leather was not burned off at the same time. As soon as the leather is affected the winding becomes irregular. I always wipe off the leather as well as I can with something soft and then put on a little powdered resin. If this does not fix it, out it comes and goes to the lathe to be skinned up.

FIG. 1.

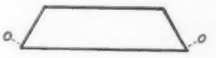


FIG 2.

I have already said that the friction dish should rise when the carriage reaches the back stop. Most men depend on the cam to do this work and never pay any attention to the finger connected to the carriage square, which will, if properly set, kick the friction dish out of action just as the carriage gets home. This also prevents smash-ups in case the carriage fails to work, and insures safety with dirty, oily frictions that tend to stick to the friction dish.

Just a few words in regard to covering frictions. The leather should be of good quality, uniform in thickness and without defects. It should be softened in water before being put on the friction cone. The holes for the rivet heads should be counter-sunk. After the leather is fastened, the friction should be put on the lathe and trued up to make it as uniform as possible. It should then be put in a warm place for a few hours or until it gets dry. Just before putting it in the mule it should have a good coat of tallow, or tallow and neat's-foot oil mixed together, or castor oil. I prefer the tallow. This coating is to prevent the leather from burning. Wipe the frictions with something soft occasionally and pour on melted tallow. This will soon put a good face on the leather, and then the friction will do its work well.

This applies to backing-off frictions, cam frictions, and belts, as well as to drawing-in frictions.

ENGLISH NOTES.

(By Our Special Correspondent.)

In granting an advance in wages, equal to 25 cents weekly for spinners, roughers and sorters, the Irish flax spinners have imposed a time limit on its continuance. The advance begins in March and ends in November; unless it appears then to the Associated Spinners that conditions warrant its retention. The plan is more or less of an innovation and if its effect is to lessen trouble over a reduction which may have become imperative, we shall doubtless see it attempted in other places.

* * *

Some gibes are provoked by the action of certain cotton mill managers in providing hot coffee for the help. Applied to millworkers the provision is a novelty, but for a generation or two the counting-house staffs of our foreign-born cloth merchants have taken afternoon tea or coffee at the expense of the firm. When profits were larger warehousemen working late at night were sustained by savory legs of mutton. Really there is a good deal to be said for energizing your six o'clock men with hot stimulant in winter weather. The example should not be lost on those who see the necessity of making their assistants comfortable.

* * *

A protest from some cloth pressers who are now proposing to decline to handle any pieces of more than sixty yards in length, is a reminder of a curious anomaly in English trade. Our heaviest woolens are woven into the longest pieces. Ninety or a hundred yard pieces are nearer the rule than the exception in the Batley neighborhood where plain-dyed goods of 24 to 30 ounces a yard are most abundant. Pieces weighing 200 pounds each are the outcome of the system of finishing goods at so much per piece instead of per yard. A piece meant originally 60 yards and there is no saying that it may not come to mean 120 unless other methods of payment prevail.

The several districts and trades have their own conventional lengths. About Galashiels 30 to 35 yards constitutes a piece of Scotch tweed, Yorkshire tweeds are 50 to 60 yards, good plain dress goods are from 40 to 45 yards, cheap costume cloths 60 to 70 yards. Many cottons are woven as "lumps" and cut up into "ends," but in dyed and printed cottons of various sorts a similar divergency of piece-lengths is shown. "Piece" has so many meanings that merchants prefer to make their orders clear, and length, like width and weight, is specified separately.

* * *

A Bradford trade dispute raises the question whether a buyer of tops or noils is entitled to assume that the addition of oil since scouring has not exceeded 3 per cent. In ordinary practice from 3 to 4 per cent. is normal in Bradford combed stock and more is added if the wool appears to need more in order to spin well. Trouble arose about a lot of black Botany noils, bought on a sample containing 6.77 per cent. of grease. At the time of purchase the excess of oil escaped notice and the buyer declared that a tacit understanding that about 3 per cent. was the standard, governed all transactions; that excess of this standard should be declared by the seller; and that nobody could judge by touch or smell how much added grease noils contained. The arbitrator ruled that the excess of oil disclosed itself on reasonable examination and that the lot had been bought by sample. As the bulk contained 8.35 per cent., an allowance of a cent a pound for the discrepancy was made. Buyers of noils, like buyers of woolen wastes, have therefore to satisfy themselves as to the ratio of oil present.

* * *

At the Bradford Conditioning House samples to be tested for oil are first weighed and then reduced to absolute dryness. They are scoured clean with neutral soap and water not hotter than 120° F. and in the case of woolen yarns and wastes a little free alkali is added to the lye bath. Again the samples are brought to absolute dryness and the difference between the first and sec-

ond weights forms the basis of the calculation for the percentage of oils and insolubles. For tops and noils the fee charged for a test is 75 cents and American buyers of Bradford combed stock may stipulate for a Conditioning House certificate if they so desire.

* * *

Merchants (Two or Three) Wanted, to join Advertiser in making cheap Mercerized Figures; small capital, no plant or skill required; designs can be pirated; Advertiser has telephone, and knows how to make dyers and commission weavers stand all losses; good return certain. Write N 882, Observer.

The irony of this advertisement from a Bradford paper will be better understood by those who know the position of certain of the Bradford "manufacturers." They are individuals with small town offices who buy warp and filling and have their weaving and dyeing done by commission masters. The advertiser is doubtless a competitor who ignores the fact that dyers are not so easily coerced in these days and that commission weavers continue to get payment for very indifferent work. Behind the insinuations is a grain of truth. The art of passing on responsibility for errors has been highly developed by those who sub-divide the worsted industry.

* * *

In the opinion of a leader of textile trade-unionism the English workman in the textile industry turns out more work than his American brother and gets less money for doing so because he is less well organized. The words are those of Alderman Gee, whose connection is with the woolen trade and who has returned recently from America. They do not tally with all other experience so far as concerns work done. In general, observers agree that the American in the mill has to "hustle" and that his work is commonly better systematized for him. Exceptions are noted, as of one small woolen mill in the South in which a friend found carding, spinning and weaving—three operations requiring three distinct temperatures to be at their best—all proceeding in one and the same room.

Mr. Gee scarcely escapes suspicion of telling his audience what he thinks will be best for them to hear. It seems that "there is not that selfish spirit" among American textile workers that dominates Yorkshire. In declining to believe that protection had anything to do with better wages, and ascribing the whole advantage to trade-unionism, the observer's credentials are fatally weakened. With more claim to attention Mr. Gee might have said that there are mills in England in which men work as fast as in any in America.

* * *

"Speeding up" in the cotton mills is said now to have exceeded its profitable limits in some quarters. An expert machinist, called in to determine why a new plant at Bolton turned out less yarn than its calculated capacity, declared the deficiency to be due to over-driving. That there is a pace which cannot be exceeded without detriment to quality, everybody knows. That one can turn wheels so fast as to lose in quantity is a fact that some are only now discovering.

This check to uneconomical hurrying has been widely advertised and impetuous youth will be constrained to experiment to see whether added coal-consumption, wear and tear, and stoppage due to broken ends, do not counterbalance the supposed advantage of the extra revolutions. To the older generation the wastefulness of overspeeding is not news. There are in Lancashire many new managers with experience to gain and of course the nice balance of power and output is only to be adjusted by experiment.

* * *

"Graft," with innumerable textile people in England, is the vernacular for hard work. Graft within the American meaning of the term has suffered some discouragement under a new Act. But if graft is smaller and less frequent in English mills it is less because of legislation than of competition and reorganization. In the small dyehouses attached to mills dyers may still exact their twenty per cent. or so upon drysalters' supplies, as dyers did with some uniformity in days past. Chiefs of the large commission dyeing and printing works may fairly claim to have exterminated robbery on that scale.

Opportunities have been largely taken out of the hands of those who buy small supplies. Partly this has been done by buying in a

larger way and in securing terms that leave producers no margin for extravagant generosity to employes. Partly it has been done by discouraging the small, local intermediaries who have always been worst in depreciating qualities and in offering heavy bribes. Largely it has been due to the attitude of principals who, after satisfying themselves that the price was the lowest and the goods genuine, have insisted either that they be used and to good purpose, or that the foreman go.

To the complaint that the acid or the color is not as it should be, the answer is returned that "it is good enough for us;" that it will have to be used; that at the month end it will be ascertained whether its cost in work compares well with the material used previously. These measures, taken with entirely independent buying, have reduced the possibilities of plunder to the lowest, if they have not destroyed bribery altogether.

Suppliers who are conscious of a strength based on the merit of their goods and secure in the co-operation of the principal, are not the men to share a profit with the underlings. A stand in opposition to the technical man with corrupt leanings can be taken best by employers who are practical men themselves. They it is who have succeeded best in England and they who are fleeced are the individuals who from indolence or incapacity accept prejudiced evidence. Men who are sufficiently masters of their own business have managed to diminish the graft evil considerably.

* * *

The new schedule of payment for dyers under the Bradford Dyers' Association may be thus summarized:

Men, 26 to 28 shillings a week; improvers, 18 to 25 shillings; boys (under 18 years), 10 to 18 shillings. These rates are for Bradford; wages are one shilling less in neighboring towns and two shillings less in country branches. At eighteen a boy gets 18 shillings and he becomes an improver, with wages of 20 shillings, at age nineteen obtaining annual increments of one shilling. To a limited extent the staff may be reduced and the unions and the Association between them will provide out-of-work benefits, in equal shares, for men displaced by the reorganization of departments. Agreement on these points has been reached after long bargaining and if there were no such thing as short time, dyehouse work would be very much better paid than was the case a few years ago.

* * *

The absorbency of fabrics is a matter about which relatively few need to trouble and to which—if one may judge from towelings on the English market—very little attention is paid. However, the matter has been investigated and a paper by Eric Drabble and F. A. Upsher-Smith of Liverpool University gives some valuable hints. Experiment shows cotton to hold water better than ramie or tow or wood-wool. It shows also that all vegetable fibres improve in absorbency when de-fatted. By extraction of fat, 3 1/2 ounces of commercial cotton gauze, as used in surgical dressing, is made to hold 22 ounces of water in place of 20 ounces before treatment. Commercial best cotton-wadding holds 31 1/2 ounces after de-fatting in place of 27 ounces beforehand. From different mills samples show varying proportions of fat. In the cases named .59 per cent. of fat (oil and wax) was extracted from gauze and .62 per cent. from cotton wadding.

No doubt these findings have a direct application to an inquiry made by makers of a cotton pile-fabric who experience difficulty in getting uniform and satisfactory absorbency after bleaching. Certainly their pattern smells of oil and their first step should be the riddance of that hostile element. Sufficiently prolonged and severe scouring to extract the oil from so bushy a pile would in all likelihood be detrimental to the fabric. A good boiling caustic lye naturally suggests itself. This will saponify the fat and serve the purpose of many washings and the treatment ought to precede bleaching.

The bleach liquor itself deserves attention and it will be better to "sour" with hydrochloric than with sulphuric acid. With the former and calcium chloride, a highly soluble salt, is formed and with the latter calcium sulphate, which is insoluble. A little calcium chloride remaining in the pile will add to the capacity of the fabric to attract water, while

the other will rather diminish absorbency. If a final measure to make all safe is desirable, one whose days are spent in considering the problems arising from fat in fibres suggests a further bath in a slightly alkaline solution. This done, one ought to have a towel cloth of the highest absorptive power; which point is reached usually when a towel is ragged from long service.

DRESSING WOOLEN AND WORSTED YARN.

BY WILL NELSON.

(Continued from February.)

Fancy Woolen and Worsted Warps. The number of ends in one section is nearly always governed by the number of ends in one pattern. There must be the same number of patterns in each section or there will be a loss of yarn. It is very seldom that less than a whole pattern is placed in one section for reasons that will be apparent later. If a portion of the warp has to be left in the dresser for a leader, allow two yards to each section for waste.

Fig. 3 is a cloth made from the following particulars:

2046 ends, 2/40s worsted, 33 inches on beam.

11 patterns, 11 sections.

Section:

124 ends light blue,
60 ends dark blue,
2 ends red.

186 ends.

Spools:

4 light blue, 31 ends each,
2 dark blue and red, 31 ends each.

Length of warp, 100 yards; number of yards on each spool, 1,122; number of teeth on the spooler, 37 1/2; width of section, 2 3/4; number of ends in condenser reed, 8; pattern on design paper; number of teeth on measuring roll, 200. The two outside sections are wider to allow for the selvage of one-half inch on each side.

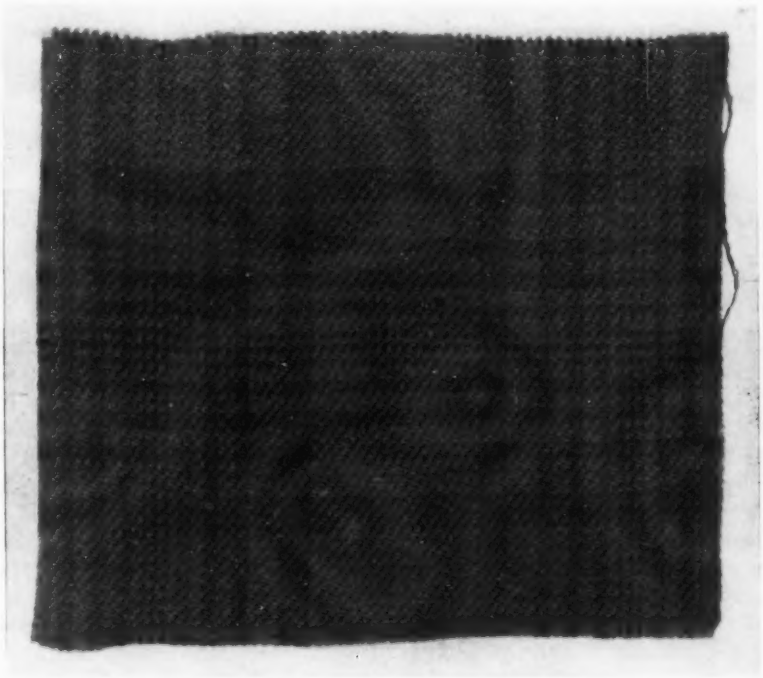


FIG. 3.

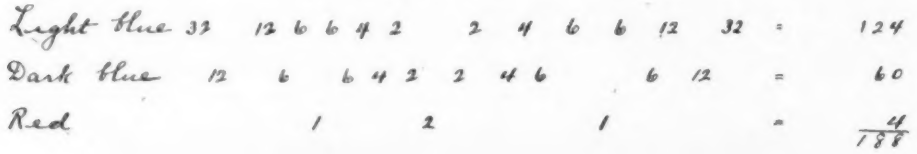
When a pattern is required that has more threads in it than the creel will hold, the threads for one half the pattern could be placed on the spools and the yarn run in the alternate sections on the reel. Then the spools for the other half would be used, the yarn being placed in the empty sections on the reel. This does not give satisfaction as there is always the possibility of threads overlapping. One pattern for each section was chosen because of the odd number of patterns. If the cloth had been wider, even to the extent of another pattern, two patterns would have been placed in a section. It will be noticed that the spools have fewer than 40 threads on them for this reason. It is better to have the spools as nearly equal in size as possible, as the weight can then be better adjusted; besides if spools of 40 ends had been made there would have been three of the light color and four ends over. Of course bobbins could have been used and are often used, but if possible it is better to have all the yarn on the spools and the tension is sure to be the same. The length on a spool is obtained in this manner: If the ends on a spool are enough for one warp, only the length of the warp plus the waste would be required on the spools, but as there are eleven sections it requires eleven times the length of the warp, plus the waste, to be placed on the spools. $(100 \times 11) + 22 =$ 1,122 yards. There are 30 yards to one tooth on the clock, practically 37 1/2 teeth.

The jack spool on the spooler is driven by friction and the possibility of loss through slipping is allowed for in the two yards on each section.

There are three distinct ways of tying-in the patterns:

1. The bunch of threads in the pattern reed is counted starting at the right hand side if most convenient. Following the pattern it reads 32 light, 12 dark, and repeat. Count off the light, drop these threads; count the number for the dark, place these over the reed, and so on until all have been separated. There are four spools of light blue. As it is better to take a thread from each spool,

FIG. 4.



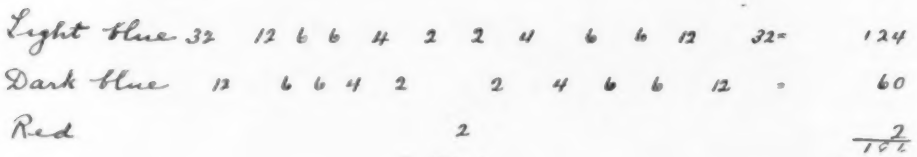


FIG. 5.

count off the first and fifth from each division in the pattern reed. There will be 31 threads; tie them together and drop until the others are separated, second, sixth, third, seventh, and so on. After all the threads have been separated for the light blue there will be 4 bunches with 31 ends in each bunch. Count the ends in the dark blue in the same manner, leaving out two for the red. As there are only two spools of the dark blue, take the first and third, then the second and fourth. When all have been bunched tie or twist the first bunch to the ends on the bottom spool, then the second to the second, and so on. It will be noticed that as one spool is tied in those threads will have to be left over to tie in the second, the third and so on.

2. Count off the number of ends for each color and throw the last thread over the reed; this will be readily noticed when the threads are being tied together. The same

procedure is followed as with the grey warp, changing the color when the thread denotes it. This method saves one-half the time in tying-in a warp and in addition there is no possibility of breaking the threads or causing several to twist together as may occur by the first method.

3. This requires close attention. The threads are not counted, but tied in the same as a grey warp, closely following the pattern so as to change the color when required. No matter which method is used care must be exercised in tying the new pattern as every thread must be in its right place. They must also occupy the right dent in the block reed or a wrong draw will possibly occur. When the back beam system is followed a warper and creel similar to the cotton warper and creel are used, the spools being placed according to the pattern in the creel, the back beams taking the place of the jack spools in the former method. The back beams are generally used with the hot air slasher, which is almost identical with the woolen dresser, aside from the drum or cylinder. The back beams are to be preferred to the jack spools for fancy patterns as it is far easier to arrange the colors in the large creel of several hundred ends than on spools that hold about 40 ends; besides, larger sections can be made.

The cylinder slasher is coming into use for sizing solid warps of woolen and worsted. It was thought at first that the direct contact of the heated surface with the yarn would burn the yarn, but that is not so. It is sometimes a very difficult matter to place the colors on jack spools without crossing the threads behind the pattern; this must be avoided, as crossed threads have a tendency to snarl behind the reed, causing break-outs or tightening several threads. These threads show very plainly in the cloth.

It was a simple matter to space the spools for this pattern as a glance at Fig. 4 will show. There are 30 dark threads on each side of the 2 red threads and, as two spools are used, 15 on each side of 1 red thread would give the required number and without crossing; if the pattern had been arranged as in Fig. 5 the threads would have to be spaced as follows: first spool, 9 dark, 1 red, 6 dark, 1 red, 6 dark, 1 red, 9 dark; second spool, 15 dark, 1 red, 15 dark.

FIG. 6.

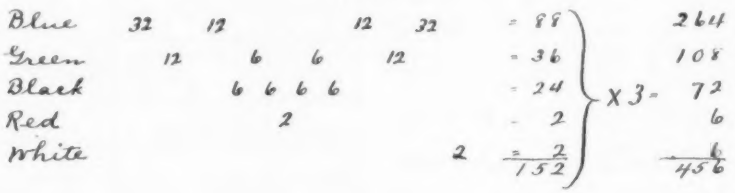


FIG. 7.

It sometimes happens that after making the best arrangement of spools possible there are several threads of each color left. Rather than use so many bobbins the threads are spaced on one spool, requiring careful arrangement if crossing is to be prevented.

Fig. 6 shows a pattern that can be so arranged as to require considerable spacing, or so that much time may be saved. There are three patterns in a section, making a total of 264 blue, 108 green, 72 black, 6 red, 6 white. If the full number, 40 ends, had been placed on some spools there would have been the following spools: 6 spools of 40 ends, 24 over, blue; 2 spools of 40 ends, 28 over, green; 15 spools of 40 ends, 32 over; 4 ends of white; 4 ends of red. This would

have necessitated several spools with a small number of ends on them and considerable spacing, but if arranged as follows there would be less work: 5 spools of 38 ends; 2 spools of 37 ends, blue; 3 spools of 36 ends, green; 2 spools of 36 ends, black; 6 bobbins of red; 6 bobbins of white; or the red and white could be spaced as follows: on two of the spools of green arrange 6 green, 1 red, 12 green, 1 red, 12 green, 1 red, 6 green. Place the white on the black spools: 12 black, 1 white, 12 black, 1 white, 12 black, 1 white.

Fig. 7 shows how the spacing is obtained. Mark down the order of threads on the spools that have to be spaced; there are 3 green spools, 2 black spools, and of course the numbers will be divided on those spools; for instance, there are 18 green threads before the red threads and there are three spools; the white threads are at the end of the pattern so they will naturally be at the end of the black threads. If a white selvage is made the two white threads would be left in; if a dark selvage two white threads from the bobbins could be added at the beginning of the warp, or the last two white threads taken out at the last section. This would make both edges of the cloth the same.

ORDER AND MANUFACTURING BOOKS FOR A WOOLEN MILL.

BY CHARLES HERITAGE.

(Continued from February.)

Fig. 15 is the spinning room ticket, which should be attached to each box of yarn as it leaves the room. This ticket is copied by the overseer of the dressing room as each lot is received. After the yarn is spooled he records the number of spools of yarn made from the lot, with the number of holes of yarn on the spools, Fig. 16. Fig. 17 is the spooler ticket, which should have the lot, color, run, holes and spooler numbers. The dressing order book is kept as shown at Fig. 18. The superintendent or designer enters the orders to be dressed, giving the date, number of orders, style and number of pieces of each. As each warp is dressed the overseer of the dressing room attaches to each a warp ticket bearing the warp number, number of cuts, style number, number of ends, warp, color, and number, Fig. 19. The remainder of the ticket is filled out in the weave room. Fig. 20 is a method of making out the dressing room weekly report.

FIG. 15.

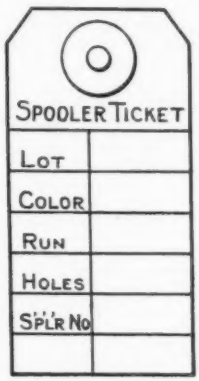


FIG. 17

As the overseer of weaving receives the different lots of yarn from the spinning room he records the data on each ticket in a book ruled like Fig. 21, called the lot book. The

DRESSING ROOM LOT AND YARN BOOK

DATE	LOT	LBS.	COLOR	CARD	MULE	WARP	RUNS	TWIST	SPOOLS	HOLES	REMARKS
Sept 11	103	275	12 Oxford Mix	2	2	½W½	W5	R	3	150	
	104	700	7 Full Black	3	3	W	3	R	20	800	

FIG. 16.

daily weave room cloth book, Fig. 22, contains a record of the date, loom number, name of weaver, number of piece, number of yards woven, weight per yard, style number,

DRESSING ROOM ORDER BOOK

DATE	ORDER	STYLE	PCS.	REMARKS	DATE DRESSED	STYLE	PCS.	DRESSER NO.	REMARKS
Sept 7	#40	167	12		Sept 10	160	12	2	
" "		200	18		" 11	200	18	1	
" 12	#41	168	10	Hurry this style	" 12	168	10	1	

FIG. 18.

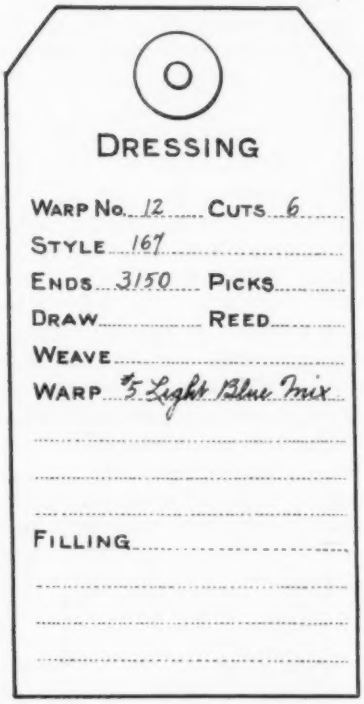


FIG. 19.

number of picks per inch, number of shuttles used, and price paid for weaving. These records are made by the overseer of the weave room or the cloth inspector.

When a warp is put into a loom there

DRESSING REPORT

WEEK ENDING Jan. 5. 1907.

	PCS.	STYLE	NO. SPOOLS	HOLES ON EACH SPOOL
	15	760		
	30	764		
	25	610		
12 Oxford Mix			70	60
2 Full Black			50	50
5 Lt. Blue Mix.			20	50

FIG. 20.

should be as many tickets made out as there are cuts of warp on the beam and the numbers when copied into the warp book should be placed in their order as shown in Fig. 23. The records in the weave room cloth book should be copied in the warp book. The daily report of the weave room is made out

WEAVE ROOM LOT BOOK

DATE	LOT	COLOR	WT.	WARP	FILLING	CARD	RUNS	TWIST	REMARKS
Sept 11	103	12 Oxford Mix	275	W	F	2	4 5/8 4 1/2	R L	

FIG. 21.

DAILY WEAVE ROOM CLOTH BOOK

DATE	LOOM	NAME	PCE. NO.	YDS.	WT.	STYLE	PICKS	SHUT'L	PRICE	FINE	REMARKS
Sept 11	30		1780	53 ¼	26 7	760	36	4x4	11 5		
	38		1720	53 ¼	26 7	"	"	"	"		

FIG. 22.

WEAVE ROOM WARP BOOK

DATE	LOOM	NAME	PCE NO.	YDS.	WT	STYLE	PICKS	SHUT'L	PRICE	FINE	REMARKS
Sept 11	26	Frank Jones	1720	53 ½	26 7	760	36	4x4	10		
			1721	52 ¼	26 5	"	"	"	10		
			1722	50 ¾	26 8	"	"	"	10	15	Mucpucke
	34	Wm Johnson	1727	50 ½	25 7	610	44	4x4	11 5/10		
			1728	51 ¼	28 8	"	"	"	"		

FIG. 23.

DAILY WEAVING REPORT

Sept 11 1906.

STYLE	COLOR OF FILLING		LOOMS	CUTS TO WEAVE
1607	5 Oxford	2 Full Black	2	3½
1611	2 Full Black	12 Oxford	9	30

PIECES WOVEN	
STYLE	NO. PCS.
1607	2
1610	8
1680	7
TOTAL	17

FIG. 24.

WEAVE ROOM REPORT

WEEK ENDING Sept 11 1906

STYLE	No. Pcs.		STYLE	No. Pcs.	
1604	15	Woven and Inspected	1604	14	On Loom not woven
1610	14	" " "	1610	8	" " "
1680	12	" " "	1652	22	" " "
1604	2	On floor	1668	6	On beam
1610	3	" "	1602	12	" "

FIG. 25.

as shown at Fig. 24. This gives the style and number of looms on each style, color of filling for each, and the number of cuts in the looms yet to be woven and the number of pieces of each style. The weekly report of the weave room is kept as shown at Fig. 25.

WEAVE ROOM LOOM TICKET

No. WARP	12
STYLE	167
ENDS	3150
REED	13
CUTS	7
PICKS	44
PRICE	12
LOOM	2
MED. L'GTH	48-50 yds

FIG 26.

The law of Massachusetts requires that a ticket shall hang from each loom and this should be made out as shown at Fig. 26.

(To be continued.)

THE LACE INDUSTRY.

BY H. L. GODFREY, M. L. M. A.

Perhaps there is no industry more interesting than the manufacture of lace, as it covers so many varieties of manufacturing from a pair of cheap lace curtains at 50 cents to the finest Chantilly at $5.00 a yard. There are five distinct branches of the industry, each requiring five different kinds of machines or looms, the products being as follows: lace curtains, warp lace, plain net, Levers lace, Plauen lace. The most important branch in the United States is the manufacture of lace curtains, which is largely carried on in Philadelphia, Scranton, Tariffville, Gouverneur, and other towns. The other branches have not as yet been developed on a large scale.

A modern curtain machine costs in Nottingham, $5,000, is 384 inches wide and turns off eight curtains at once, all of the same pattern. This loom is a fine example of ingenuity and mechanical skill. Although it has been in use in the United States more than fifteen years no American has attempted to build one. It differs from the ordinary textile loom in the important particular that the weft can be stopped at the will of the operator, thus forming holes in the fabric. The loom has a warp, of say, 40s yarn, the threads of which run perpendicularly and are placed at equal distances according to the gauge, varying from six to twenty threads an inch. In the rear of the loom are the same number of spools of warp threads containing, say, 32s yarn and replenished by the weavers as they empty. The round brass bobbins rotating in a steel carriage, Fig. 1, are wound with fine 72s or 80s yarn. There are the same number of these as of warp and spool threads. The carriages have a motion from back to front of the machine, running in brass grooves (called combs) with an inch space between and lubricated with fine black lead.

When the warp and spool threads arrive at the inside of the loom they are threaded to two fine steel guide bars and vibrated laterally by cams at the end of the machine. The jacquard placed above the loom receives the pattern in the shape of cards punched in given places, so that when the needles get through the holes, the strings attached pull the jacks back from inside the loom, allowing the spool threads to traverse the warp threads, 1, 2, 3 and 4 gaits, thus forming the flowers, etc.

When it is not desired to cross them from one warp thread to another they twist around the vertical warp threads and are fashioned by the fine yarn in the bobbin, imperceptible to the naked eye. Two catch bars back and front of the steel running the

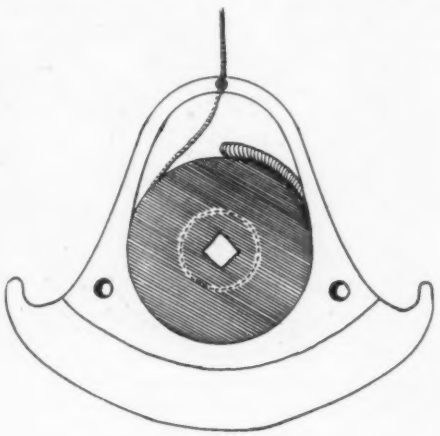


FIG. 1.

whole width of the loom, pull the carriage backward and forward, intercepting the warp and spool threads in a different place every time. Back and front point bars with horizontal steel teeth like a comb pick up the twisted threads and join them to the woven fabric on the facing bar. The pattern cards revolve around jacquard cylinders, a repeat of, say, 24 inches, to make any length of curtain required. Such a loom will turn out from 200 to 300 pairs of curtains weekly, according to the closeness of the texture, which varies from 12 to 40 motions of the jacquard in an inch.

Still another fabric is made by the introduction of an extra warp and an extra guide bar carrying fine yarn. The loom then makes a fine mesh ground work, running all over the pattern the entire width of the loom, or can be stopped at intervals to form stripes.

The Levers machines are similar in build to the lace curtain machine and cost about

$4,000, but they are very much more complicated and are not so wide. On these machines the jacquard is placed at the end. No strings are possible; it is worked by spring droppers connected with as many as 120 fine steel bars perforated at the top at regular intervals, carrying varying counts of yarn coming from small beamers in the rear. The

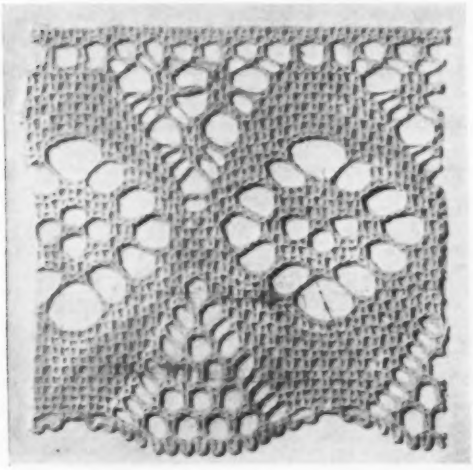


FIG. 2.

steel bars are made to move backward and forward laterally by the action of the jacquard with the perforated cards. The bobbins and carriages cross at different places. The process of picking up the mesh is the same as in the curtain loom.

The warp machine is very similar in appearance to the curtain machine and makes a cheap kind of very strong lace, Fig. 2. A jacquard is used but no bobbins or carriages. The spool and warp threads alone form the fabric. The plain net machine is different from either and costs from four to five thousand dollars. It weaves, without the aid of a jacquard, all kinds of plain net of different grades. To weave spots without a jacquard a patent attachment is used. The accessories for a lace plant consist of a warping mill, brass bobbin winding engine, spool winding engine and a few small inexpensive appliances. The Levers and plain net machines weave the ground work for ladies' veilings and chenille to be spotted by hand.

Plauen lace is possibly the most beautiful of all lace fabrics, though its manufacture dates back not more than twenty-five years. The machine on which it is made costs only $750 in Chemnitz, and was offered to Nottingham manufacturers who most unwisely refused it. The patentee then took it to Plauen, Saxony, and in twenty-five years the town has doubled its population and 100,000 people are supported directly and indirectly by the industry. Millions of dollars of this lace are purchased annually by the New York and Chicago importers to the loss of Nottingham.

The process of manufacture is simplicity itself. The machine is about 60 feet wide

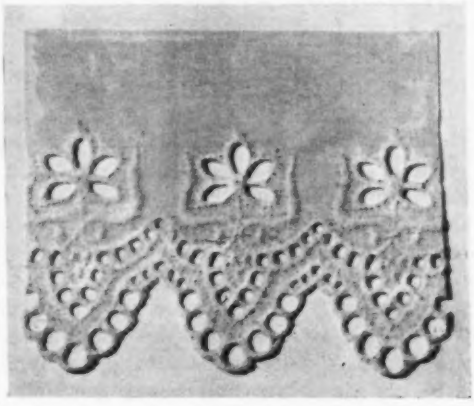


FIG. 3.

and entirely different from an English machine. It is simply a large sized sewing machine, but the needles instead of running perpendicularly run horizontally across the loom. A piece of pure wool, the thickness of wool shirting, is wrapped around a beam across the loom. The pattern acts on the needles from a pantagraph at the end of the machine and is stitched on the wool with cotton. The piece when completed is dropped into a vat containing a strong solution of soda, which burns away the wool and leaves the cotton lace intact. This is then ironed, carded, etc., ready for sale. Any form can be made in parts and joined together by needle women so that the seam cannot be detected.

Questions and Answers.

Under this head we undertake to answer, free of charge, to the best of our ability, any pertinent inquiry pertaining to textile matters received from any regular subscriber to the TEXTILE WORLD RECORD. Questions should be stated as briefly and concisely as possible. Inquiries pertaining to textile processes, machinery, improvements, methods of management, the markets, etc., are especially invited, as well as any legitimate discussion on the views expressed. All inquiries must be accompanied by the name of the person inquiring ,not for publication, but as an evidence of good faith.

For reply to questions that are not of general interest to readers of textile journals, such as those relating to the composition of yarns, analysis of fabrics, etc., we will charge the enquirer with the cost of the investigation.

Sizes of Spinning Rings and Yarn Counts.

Editor Textile World Record:

I would like to know something about the relation between the sizes of spinning rings and the different counts of yarn. Robbins (819).

There is no doubt that a careful adjustment of the diameters of rings and bobbins for spinning different counts of yarn is necessary to obtain the best results. At the same time it is not economical to purchase new bobbins or replace all the rings in a spinning room to accommodate every change in the counts of yarn made. For this reason a given size of ring must be used for a variety of counts with a bobbin of a given diameter, and a change in the size of the traveler to regulate the tension on the yarn is all that is required, in addition to the regulation of the rolls, draft and twist.

It may be assumed that wherever practicable a long bobbin used with a large ring would be an advantage by saving time in doffing in the spinning room, by saving time and reducing the number of knots made in spooling, and, in the case of filling yarn, by running longer on the loom. Of course conditions outside the spinning room will put a limit on the size of the bobbin. The full bobbin of filling must be adapted to the size of the shuttle, while the size of the warp bobbin is governed by the tension that the yarn is capable of standing when being spooled.

In the spinning room, however, there are other conditions of equal importance. For example, if there is too great a difference between the diameter of the ring and the diameter of the empty bobbin, it is difficult to regulate the size of the traveler to suit the variation in the diameter, and maintain a proper tension. The result is bad spinning, uneven yarn, too much waste, and irregularities in twist and strength.

Filling yarn is usually made with 1 1/4 to 1 5/8-inch rings, and a diameter of 1/2 to 5/8 of an inch on the empty bobbin. By using a 1 3/8-inch ring and a 1/2-inch bobbin we could make, say, from 20s to 30s. By using the same ring and a 5/8-inch bobbin we may then make up to 50s or 60s by careful regulation of the traveler, etc. If the yarn is to be over 60s it would be better to use a 1 1/4-inch ring.

Empty warp bobbins are made from 5/8 to 7/8 of an inch in diameter; the diameter of the rings varies more on the warp than on the filling yarns. The following table gives approximately the spindle space, diameter of ring and traverse:

Average Counts	Space	Ring	Traverse
below 5s	3¼ in.	2¼ in. dia.	7½ to 8 in.
5s to 10s	3 "	2 "	7 " 7½
10s " 25s	2¾ "	1⅞ "	7
25s " 35s	2 "	1¾ "	6½
35s " 45s	2 "	1⅝ "	6 to 6½
45s " 65s	2 "	1½ "	6
65s " 80s	2 "	1⅜ "	5½ to 6
80s " 100s	2½ or 2¾	1¼ to 1⅜	5½
over 100s	2½	1¼ " 1⅛	5 to 5½

It should be remembered that this table is given as an indication of what size would be suitable to install for frames intended for approximately the counts given. Where there are changes to be made on frames already running, the rings in use may, if the change in counts is not great, be used with a different diameter of bobbin. J. T. B.

Expressing Proportions of Dyestuffs.

Editor Textile World Record:

If the dyeing of 175 pounds of woolen cloth requires 1 3/4 pounds of Acid Blue, 7 pounds Sulphuric Acid, and 17 1/2 pounds of Glauber's Salts, what amount of dyestuff would be required for 80 pounds and 200 grains of cloth?

Marathon (822).

Percentage is the most convenient basis for dye recipes; that is, so many weight units of dyestuff for each 100 weight units of material colored. The quantity of dyestuff required for any given amount of material can then be easily found, regardless of whether the weight is expressed in pounds, ounces, or grains.

In the formula given the quantities of dyestuff are for 175 lbs. of cloth. The amount of each kind required for 100 lbs. of material is found as follows:

1¾ (lbs.) ÷ 1.75 = 1 (pounds per 100 pounds) or %.

7 (lbs.) ÷ 1.75 = 4 (pounds per 100 pounds) or %.

17½ (lbs.) ÷ 1.75 = 10 (pounds for 100 pounds) or %.

Having reduced the formula to the percentage basis, the quantities required for 80 lbs., and 200 grains, are calculated as follows:

For 80 lbs:

80 (lbs.) × .01 = 8/10 lb. Acid Blue.

80 (lbs.) × .04 = 3 2/10 lbs. Sulphuric Acid.

80 (lbs.) × .10 = 8 lbs. Glauber's Salts.

For 200 grains:

200 (grains) × .01 = 2 grains Acid Blue.

200 (grains) × .04 = 8 grains Sulphuric Acid.

200 (grains) × .10 = 20 grains Glauber's Salt.

Reclaiming Oil from Scouring Liquor.

Editor Textile World Record:

We would like to obtain through the columns of your valuable paper particulars for laying down and operating a plant to reclaim the oil from the suds of scoured cloth in the finishing room and also to reclaim potash, salts, grease, etc., in wool scouring. Is there any sale for the product and what would be the cost of operating the plant? Our lard oil bill amounts to about $4,000 a year and our soap bill is about the same.

Chaudiere (794).

"Chaudiere" would not find it profitable to put in a plant to reclaim oil from his waste scouring liquor. This can be done only at central points where the scouring liquors of a number of mills can be concentrated and where it would be more economically feasible to treat the accumulated suds. There are only three practical ways of recovering the grease from scouring suds: one is the naphtha process, which means that the wool is scoured by the naphtha process in place of the soap scouring method and consequently this is not available in most mills, which already have the soap scouring method in use; the second is the evaporative process, which is subject to patents not available to every one; and the third is the ordinary method used in the Bradford district of cracking the suds with sulphuric acid.

By the first two methods the potash is recovered as well as the grease, while by the sulphuric acid process the potash is converted into a comparatively valueless sulphate, and only about 60 per cent. of the grease is recovered from the suds. Furthermore, after "Chaudiere" has recovered the grease in the form of brown Yorkshire grease, as it is called, or degras, he has not then reached the condition of obtaining the oil that he requires. He has then to put in a distilling plant for the purpose of obtaining the oleine from the wool grease. Altogether it will be seen that it is too elaborate and complicated a process for individual mills to undertake. Marathon.

Drawing-in Frictions.

Editor Textile World Record:

I would like to see an article on drawing-in frictions as they seem to play an important part in the production of good yarn. Clayton (775).

An article on this subject appears in another part of this issue

Baling Sea Island Cotton.

Editor Textile World Record:

I notice that while you have published a good deal on the subject of baling American, Egyptian, and Indian cotton, you have said nothing about the baling of Sea Island cotton. I would like to have some information on this subject.

Excelsior (818).

A large user of Sea Island cotton writes us in reply to this inquiry as follows:

"Cotton grown on the islands off the Carolina coast reaches us in uncompressed bags averaging about 8 feet long by 8 feet, 6 inches in circumference and weighing 335 pounds each. Cotton grown in Georgia and Florida from Island seed is put up in partly compressed bales 6 feet by 2 feet, 4 inches, by 4 feet, weighing 380 pounds each. In either case no bands are used, but the quality of the bagging is such that the bales arrive in good condition and suffer very little damage in transit."

Andover

Other large consumers of Sea Island cotton write us as follows:

Sea Island coton is not baled like ordinary cotton because of the value of the staple and the importance of it not being injured in any way. Its nature is such that it is more easily damaged than peeler cotton. It is not compressed in any way, but simply put in large bags, which are then sewn up. These bags are made of very closely woven coarse burlap and are very strong, consequently the cotton does not accumulate dirt or other injurious matter; it being impossible to break open the bags by ordinarily careful handling.

The sizes of the bags vary somewhat. The average height is about 5 feet, 6 inches, the width about 3 feet, 3 inches, and the thickness from 2 feet to 2 feet, 3 inches. The average weight of these bags is about 400 pounds, which gives a density of about 10 pounds per cubic foot.

Arthur Dyson.

The average weight of the Georgia and Florida Sea Island bales is 369 pounds; size, 30.03 cubic feet. Carolina cotton, 357 pounds and 37.32 cubic

feet. Generally speaking the former is received in good condition; the latter in excellent condition.

Seaboard.

The following letter from one of the leading dealers in Sea Island cotton in the South gives some valuable information regarding the baling of this grade of cotton:

In South Carolina the original method of packing Sea Island cotton still prevails; viz., take 12 yards of 50-inch, 2-lb. jute bagging, fold the two ends and sew the edges together very securely, thus forming a bag about six feet long. Suspend this bag with the mouth distended by a wooden hoop. The cotton is then thrown in and tramped down by the feet of a laborer, who also uses a wooden or metal pestle to ram the cotton down around the sides. When filled, sew up the mouth of the bag. The bags usually weigh 330 to 370 pounds.

In Florida and Georgia Sea Island cotton is packed in plantation cotton presses in same way as Upland cotton, but the bales usually weigh 380 to 420 pounds, instead of 500 pounds and upward, as is the case with Upland cotton, and no ties (bands) are put on a bale unless, and until, it is recompressed in city presses for shipment abroad. Instead of bands the edges of the bagging are securely sewed. W. W. Gordon & Co.

Loom Gears.

Editor Textile World Record:

Kindly give me the constant from the following particulars: Loom ratchet wheel, 92 teeth; pinion wheel, 16 teeth; sand roller, 14 inches; sand roller gear, 94 teeth; bottom gears 37-18 (the 18 gear is never changed); cloth woven 80 picks per inch.

I can get only 4 picks for every tooth changed in pinion wheel; i. e., 80 picks for 16 pinion; 76 picks for 17 pinion. I want 74 picks but cannot get it. We are using Colvin looms.

Bristol (797).

The constant from this train of gears would be: $(92 \times 94) \div (16 \times 18 \times 14) = 2.144$ Constant.

Picks $\div$ Constant $=$ Gear. $80 \div 2.144 = 37.3$ Gear.

I see that "Bristol" makes no reference to the take-up in the cloth from reed to roller and the least we have ever allowed has been 1 3/4 per cent. I find the difference between the quotient from the train of gears and the number of picks is between 1/2 and 3/4 per cent. for take-up. Assuming that this must be the amount of take-up on the loom, I find that by changing the tin roller gear to 87, the constant will be practically 2, so that the change gear would then be 37 for 74 picks. We have changed such gears when placed in the same position as "Bristol" mentions; in fact, I think that either of the two larger gears have been changed at some time in the past. Will Nelson.

Sizing for Worsted Warp.

Editor Textile World Record:

Please publish a recipe for a good size for single worsted warp. Benn (834).

A good size for worsted warp is made with 4 ounces of good glue and a gallon of water; for single worsted I would use 4 ounces of glue and 2 ounces of Irish moss to a gallon of water. This requires two tanks, as it takes a long time to boil the mixture, and one must be in course of preparation while the other is being used. Pitman.

Breaking of Coarse Worsted in Weaving.

Editor Textile World Record:

Just at present I am having a little trouble with a worsted yarn, 2/14s, made from Donskoi wool. It breaks on the back of the heddles during the weaving process. It seems to me a little finer wool would enable it to hold together better. Perhaps a little more twist in the single thread would help, although it seems as if there was twist enough. We have a very good spin on the yarn in the single. If you can suggest anything I shall be much obliged. Pericles (785).

If the yarn breaks behind the heddles before it is subjected to any chafing in weaving it would indicate that there is not enough twist in the yarn. An examination of the samples submitted would seem to confirm this, as they are rather soft. Before changing the quality of the stock it would be well to put in a little more twist. This remedy would not cost anything while the other might be very expensive.

Jute Carpet Yarn.

Editor Textile World Record:

Enclosed is a sample of jute carpet yarn spun in Philadelphia. We would like to know what amount of cotton is put in the blend, and what the size of the yarn is; also what kind and quantity of oil is used, and what grade of cotton is usually mixed with the jute in making these yarns.

Bennett (779).

There does not seem to be a large amount of cotton, if any, in the sample submitted. If there is any it has been colored. It seems to me to be more jute tow than cotton. When mixing the stock use an emulsion of borax and any good wool oil, such as olive or red oil. The day before the rags are picked lay them down in layers, using about 10 quarts of emulsion to 100 pounds of cotton card waste. Have wide rings on the doffers, say 1 1/2 or 2 inches, to get the weight of the yarn. I made this kind of yarn some years ago for carpet filling. Sam Driver.

Leader for an Indigo Vat.

Editor Textile World Record:

What would be the best material for a leader in a zinc lined indigo vat, the leader to be kept standing in the vat for some time? Is there a way to prepare cotton cloth so it will stand to be immersed in the vat liquor for a long time without tendering? Bartlett (782).

The only leader I have found that will stand for any length of time in an indigo vat is a tape leader, made like suspender webbing. It is an inch and a half wide and an eighth of an inch thick. I have also worked an iron chain leader in mercerized liquor and indigo. In order to work this chain I had to pull the material through on a piece of wood on top of the rollers and then put the warps or cloth between the rollers, and start the machine. This kind of leader will last longer than any other I have seen. Saco.

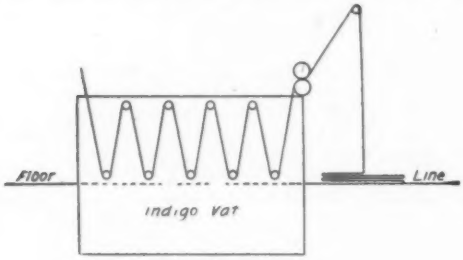


FIG. 1.

When I dyed indigo piece goods I used plain sheeting or drill made of cotton sewed to each end of the set. I hardly see why the leader should be expected to remain immersed in the dye liquor for weeks. Indigo vats for dyeing cloth are fitted with a skeleton frame or frames arranged to be hoisted out of the dye liquor so the operator can rake up the vat, or in case of accident, lift up the frame and see what is the trouble. Even those vats provided with mechanical stirring arrangements should be provided with an apparatus for hoisting the skeleton frame. As a matter of fact, the leaders can be washed and dried with each set as they are run, and every night the frame can be hoisted out of the vat, and if the operator wishes to stop the vat for weeks there need be no leader at all in the frame. An indigo vat for dyeing pieces can be made as shown in Fig. 1. Sometimes they are worked tandem with what is known as a skying arrangement between each two vats, Fig. 2. If the frame is made so that it can be hoisted out of the vat it should be like Fig. 3.

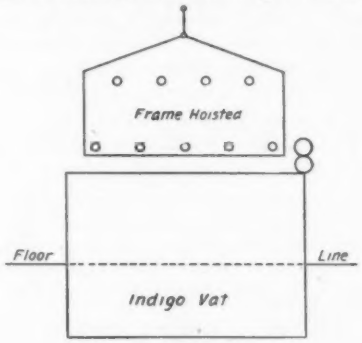


FIG. 3.

I do not know of anything that will prevent cotton cloth from tendering if left in an indigo vat liquor for a long time. When I color pieces I wash the leaders with the set and also dry them and so reduce the wear and tear of the leaders to the smallest possible amount. Baumwolle.

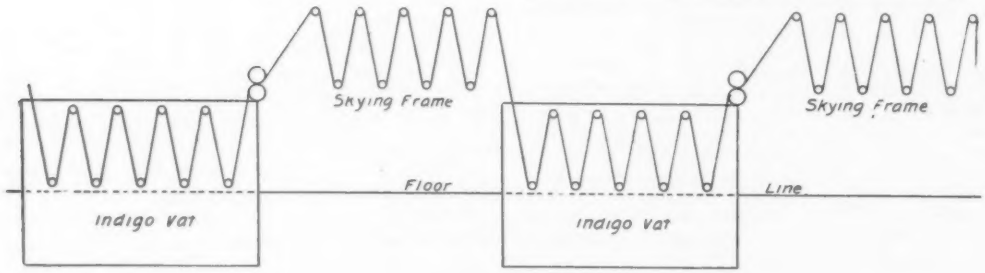


FIG. 2.

Machinery for Paper Tubes.

Editor Textile World Record:

Please inform me through the columns of your magazine where special machinery may be obtained for the manufacture of paper tubes for spinning cops. Trenton (823).

We do not know of any concern that makes a specialty of building such machinery. It is our impression that the manufacturers of paper tubes and cones have machinery of their own.

Equipment for Carded Hosiery Yarn Mill.

Editor Textile World Record:

What would be the approximate cost of a 5,000-spindle cotton mill equipped to spin and cone from 6s to 24s frame spun carded hosiery yarn? What machinery would be required and what power would be required to drive the machinery and furnish light?

What would be the production of such a mill, based on 12s yarn?

How much labor would be required and what would it cost to produce the yarn with good middling cotton at 10 cents a pound? Graham (838).

In estimating the cost of a 5,000-spindle mill to make 12s hosiery yarn it is necessary to decide first on the processes to be used. Assuming that the yarn is to be made with two processes of the fly frame, that is, the slubber and the intermediate, the latter becoming practically the roving frame in this instance as the product of the intermediate will be used on the spinning frame, the following weights of sliver and hank roving may be considered a good arrangement.

Begin with a 13 1/2 or 14-ounce lap from the finisher picker, and make a 65-grain sliver on the card with a draft of from 87 to 90 on the card. This weight of sliver can be maintained throughout the draw frames, of which there may be two or three processes.

Using a 65-grain sliver behind the slubber, and putting in a draft of about 4 will produce a .5 hank slubbing; then by feeding two ends of the slubber roving, and putting about 5 draft into the intermediate will give a 1 1/4 hank for the spinning frame. Using single roving on the spinning frame will require a draft of about 10 in this machine.

The number of hands necessary would depend upon the arrangement of the machinery, and the handling necessary between different departments; from 40 to 45 operatives may be needed in the actual mill work, with a pay roll of approximately $400 a week.

The production of the mill would be about 22,000 pounds a week and would require the following machinery:

1 breaker picker and feeder	$900
1 intermediate picker	725
1 finisher picker	725
24 cards (27-inch doffers) each $650	15,600
24 first process draw frame deliveries at $60 each	1,440
24 second process draw frame deliveries (optional)	1,440
24 finisher process draw frame deliveries	1,440
174 slubber spindles, 12 x 6, at $14.50 a spindle	2,523
450 intermediate spindles, 9 x 4 1/2, at $10 a spindle	4,500
5000 ring spinning spindles at $3 a spindle	15,000
4 cone winders each at 80 drums (at from $20 to $40)	9,600
Grinding apparatus for cards	214
Band machine for spinning room	60
Supplies, such as bobbins, skewers, spools, tubes, etc., etc.	3,500
Total for manufacturing machinery	$57,667

The power and light could be obtained from a 200 h. p. engine, which with boilers, dynamo, pumps, etc., would cost from $8,000 to $8,500.

The cost of shafting, hangers, pulleys, belting, etc., needed to transmit the power from a power plant located in or near the main building, would be about $4,000.

The building built as specified would cost about $10,000, bringing the entire plant to about $80,000.

Based on the particulars given the cost of production per pound of yarn would be approximately as follows:

Carding	$.0055
Spinning	.0060
Winding and packing	.0050
Power and yard labor	.0010
Coal	.0017
Salaries	.0025
Freight and commission	.0145
Interest, insurance and taxes	.0025
Supplies and general expense	.0050
Depreciation	.0050
Total	$.0487

Depreciation, interest, insurance, etc., are based on a capitalization of $100,000 dollars.

The amount of cotton required for this product, with an allowance for waste, would be 52 bales a week, and if each weighed 500 pounds would be equal to 26,000 pounds of cotton. At 10 cents a pound this would amount to $2,600 a week.

From this would be obtained 22,000 pounds of yarn, therefore the value of the cotton at this point would be ($2,600 ÷ 22,000 pounds) 11.82 cents per pound; adding this to the cost of production gives 16.69 cents per pound, which may be considered as 16 1/2 cents when the returns for waste are taken into account. J. T. B.

Parts of Bridesburg Machinery.

Editor Textile World Record:

Can you give me the name of the firm who has the patterns and can supply parts for the old Bridesburg cards and mules? Prescott (825).

Lindsay, Hyde & Company, 2124 East York Street, Philadelphia, can supply the Bridesburg parts.

Filling Looping on the Picker.

Editor Textile World Record:

There is one loom in my section that gives me considerable trouble with the filling looping around the picker. Can you tell me how to overcome the difficulty? Weston (827).

There are several different things that will cause filling to loop around the picker. First see that the picker is not too long. Often through an oversight the fixer will put on a picker that is a trifle too long and this will always cause the filling to loop. Sometimes if the picker strap is too long it will cause it; too much power on the loom is another cause. We had a loom once that would loop from no apparent cause, but we overcame the trouble by filing a crease in the shuttle binder just back of the bend where the shuttle strikes it, then putting a strip of lace leather around the binder so that when the eye of the shuttle came in contact with the leather it had a tendency to draw the filling tight and when the shuttle struck the picker there was no chance for the slack in the yarn to loop. The loom was run on three box work, pick and pick, but the looping was in only one box.

Greenwich.

Packing for Railroad Car Axles.

Editor Textile World Record:

I shall be obliged if you will give me the name of the fibre or whatever it is that I enclose. I understand that it is used with asbestos and woolen or other wastes for the packing of railroad car axles, and that it is mixed by dealers in Philadelphia. Can you give me the names of the sellers of these kinds of materials? Auburn (717).

The sample contains no woolen waste, although there is some asbestos and possibly some other vegetable fibre. The dark, wiry fibre is probably the prepared Southern moss, Tillandsia usneoides, which is employed in mattress manufacturing, and as a cheap substitute for curled hair. It is evidently introduced into the car axle packing to keep the mass loose and springy and thus better retain the lubricant. The moss is prepared chiefly in Charleston, S. C., and New Orleans, La. The fibre as sold for upholstery purposes is the moss simply denuded of its grey cuticle or outer covering. This outer skin was formerly rotted off by burying the moss, but is now accomplished by machinery. I cannot give a New Orleans address, but I am sure a letter sent to any manufacturer of Southern moss upholstery fibre would be delivered as there are several concerns in New Orleans.

Chas. Rich. Dodge.

Cost of Operating Looms.

Editor Textile World Record:

I would like to know the probable cost of starting and operating four jacquard and four dobby box looms. Waverly (768).

The width of the looms and the harness materially affect the cost of a loom, particularly the harness, also the style of goods that are to be made, as will be seen from the appended list of prices. Assuming that Waverly intends to weave damask the machinery required would be as follows:

4 40-inch dobby dress goods looms, 4 by 1 box, at $160	$640
4 40-inch jacquard looms, 4 by 1 box, at $125	500
4 double lift single cylinder machines, 600 hooks, at $65	260
4 harnesses for same, assuming 96 cards per inch, 40 inches in width, in round figures 4,000 ends each, at $15 a thousand	240
If the yarn is bought on beams a beamer or slasher is not necessary, but a quiller will be required for the filling, which will cost about	125
Second hand motor 5 to 7 h. p. if electric driven	110
The cost of power varies in different cities so no estimate can be given.	
If the warps are to be bought in chains, skeins, or on bobbins and colored yarns are to be used in addition to gray, these items must be added:	
1 slasher, 7-foot and 5-foot cylinders	1,200
1 warper, 54-inch	120
1 long chain beamer	125
1 spooler, 60 spindles at $2.80 a spindle	168
500-spool creel for warper at 12 cents a spool	60
There will also be spools, bobbins, shuttles, leather, etc.:	
Spools, $90 to $125 a thousand.	
Bobbins, $7 to $15 a thousand.	
Shuttles, $3.50 to $7.00 a dozen.	
Payroll:	
2 weavers at $9 a week	18
1 winder	5
1 overseer	16

The prices quoted are for new machines except the motor. Second-hand machines can sometimes be bought to advantage.

Will Nelson.

Sizing Compound for Silk.

Editor Textile World Record:

We would be very much helped if you would tell us how to get over this difficulty: We are trying to boil a solution of 1 pound of olive oil, 1 pound of neat's-foot oil and 4 ounces of common salt, to make a sizing compound of 5 gallons. We are unable to mix it on account of the salt, and think possibly you can tell us whether it can be done or not. Forrester (809).

If "Forrester" will boil the oils together, then very slowly add the salt, at the same time keeping

the solution in motion by stirring, I think he will overcome the difficulty if the oil has not become rancid. If this is not satisfactory, try soda or potash instead of salt. David Denier.

American Textile Machinery in England.

Editor Textile World Record:

In the January, 1907, issue of the Textile World Record, in "English Notes," there is a statement to the effect that English papers are inserting advertisements for experienced salesmen to sell American textile machinery in England and on the Continent, and also a statement that as far back as 1903 more than one million dollars' worth of American textile machinery per year was being sold in England. Have you any authoritative statistics in regard to this matter?

Exporter (843).

Our English correspondent replies to this as follows:

"The note in the January issue on the sale of American textile machinery in England seems to have given rise to some misapprehension. It was not stated that in 1903 more than a million dollars' worth of American textile machinery was sold in England. Such was the value of machines imported from all sources, and import statistics do not detail the countries of origin. We have imported automatic looms from the United States in years past but it is probable that the average of $856,000 worth brought into Britain during the last five years consisted principally in continental dyeing, finishing and carding machinery.

"Lest the statistics of export be of interest, be it said that an average of roughly 2 1/2 million dollars' worth of textile machinery has been consigned hence to the United States annually during the period 1902-06. The export was at its lowest in 1904 ($1.8 millions) and at its highest last year ($2.98 millions), while in 1902 it was $2.75 millions. Not impossibly some portion of the American total should be credited to Canada as confusions are common when goods for one country are shipped over the ports of another. The full British export of textile machinery during last year was $33.55 millions and the average for five years $26.55 millions."

Cloth for Roller Covering.

Editor Textile World Record:

Where can I get cloth like the sample enclosed, which is used for top roller covering in woolen and worsted mills? Williams (804).

The sample of cloth submitted is used for the under covering of soft rollers, such as are used by the mohair, alpaca and fancy yarn spinners. It is imported by the L. M. Bowes Co., 451 Atlantic Ave., Boston, Mass.

Numbering Silk Yarn.

Editor Textile World Record:

How is silk yarn numbered?

Corinth (798).

Spun silk is numbered by the cotton system, the number or count indicating the number of 840-yard hanks per pound. Thus No. 20 spun silk measures 16,800 yards per pound. This applies to both single and ply yarn, the number indicating the count of the twisted or ply thread. Thus a 3-ply No. 10 spun silk is composed of three single strands of No. 30, the count being expressed thus: 10/3; the first number being the count, the second the ply.

Following are several illustrations of spun silk counts:

20/1 = single 20s spun silk.
12/2 = 2 threads of 24s spun silk.
20/3 = 3 threads of 60s spun silk.

The count of cotton yarn on the other hand always refers to the single strand, and when giving the count, the ply is written first; the count of the single strand second. Thus:

1/20s = single cotton.
2/24s = 2 threads of 24s cotton.
3/60s = 3 threads of 60s cotton.

Raw silk is numbered in all parts of the world by the denier system, which originated in France, and indicates the weight (in deniers) of 400 aunes of silk yarn. The aune is equal to 1.3014 yards; 533 1/3 deniers are equal to 1 ounce. The equivalents of the denier-aune standard (deniers per 400 aunes), as used for raw silk, are as follows:

Pounds per 4,442,112 yards.
Ounces per 277,632 yards.
Drams per 17,352 yards.
Grams per 635 yards.

In English-speaking countries, and to some extent on the Continent of Europe, reeled silk is numbered by the drams (1/16 ounce) per 1,000 yards. The denier, dram and spun cotton counts are reduced by the following formulas:

$$\left.\begin{matrix}5289 \\ 304.8\end{matrix}\right\} \begin{matrix}\div \text{ deniers} \\ \div \text{ drams}\end{matrix} = \text{cotton No.}$$

$$\left.\begin{matrix}304.8 \\ .0576\end{matrix}\right\} \begin{matrix}\div \text{ cotton No.} \\ \times \text{ deniers}\end{matrix} = \text{drams}$$

$$\left.\begin{matrix}5289 \\ 17.352\end{matrix}\right\} \begin{matrix}\div \text{ cotton No.} \\ \times \text{ drams}\end{matrix} = \text{deniers}$$

Ex. Reduce 55 denier to the dram and spun cotton equivalents:

5,289 ÷ 55 (denier) = No. 96 cotton.
.0576 × 55 (denier) = 3.17 dram.

Ex. Reduce 3 dram silk to the denier and spun cotton equivalents:

304.8 ÷ 3 (dram) = No. 101.6 cotton.
17.352 × 3 (dram) = 52 denier.

Ex. Reduce No. 100 cotton to the denier and dram equivalents:

304.8 ÷ 100 (cotton No.) = 3.05 dram.
5.289 ÷ 100 (cotton No.) = 52.89 denier.

Equipping a Yarn Mill.

Editor Textile World Record:

In your November issue was an estimate of a blanket mill. Can you give me a similar outline for a yarn mill to make from 8s to 20s yarn, the equipment to be small, but large enough to run on an economical basis. Dunton (814).

Taking an average yarn of 14s as the basis we will assume that about 12,000 pounds a week would call for a plant of reasonably economical construction. One set of pickers would supply such a mill.

The breaker picker may be started to make a 14 to 16-ounce lap; and the intermediate picker, about a 14-ounce lap; while the finisher picker may make a 12 or 13-ounce lap to be used on the cards. The cards may make a 60 or 65 grain sliver. This weight may be maintained throughout the draw frame processes. The hank made on the fly frames will depend upon whether two or three processes are used. If the counts are from 12s to 16s I would recommend only a slubber and intermediate; then the hank made on slubber may be .6, and the hank made on the intermediate may be 1.5, which could be used single on the spinning frames.

Following is a list of the necessary machinery:

1 breaker picker with automatic feeder..	$900.00
1 intermediate picker.....	725.00
1 finisher picker.....	725.00
15 revolving flat cards, $650.00.....	9,750.00
24 draw frame deliveries, $60.00.....	1,440.00
2 slubbers, 64 spindles each, 12 by 6, $14.50	1,856.00
3 intermediates, 108 spindles each, 10 by 5, $10.50	3,402.00
16 spinning frames, 208 spindles each, 2 3/4-inch gauge, built with combination builders for warp or filling, $3.00	9,984.00
4 yarn reels, 100 spindles each, $1.00 per spindle	400.00
Total	$29,182.00

To this it will be necessary to add the cost for belting, shafting, bobbins, spools, cans, skewers, stripping and grinding apparatus, etc., etc., the cost of which will vary according to the quantity laid in stock.

The power necessary to run the plant could be obtained from an engine of about 150 h. p. The power plant, including engine, boiler, and all accessories would cost about $6,000.

Belting for entire plant, including main drive from engine and all counter belts, would cost approximately from $1,000 to $1,200, which would bring the total cost nearly to $38,000 after making some allowance for supplies not included in the power or belting. To this should be added the cost for fire protection, humidifying apparatus and ventilating. J. T. B.

Bleaching Jute.

Editor Textile World Record:

What is the best process for bleaching jute waste so it will take a shade as light as possible?
Wilkinson (820).

There are various processes for bleaching jute, but for all of them a thorough cleansing of the material is essential. The jute is handled in a weak solution of soda and silicate of soda followed by a rinsing in cold water. The best way is to boil the waste for one hour in a weak soda solution, during which time the material is poled occasionally. The brown liquor resulting from this process is run off and the tub filled with clear cold water. The jute saturated with water is then entered in a chloride of lime solution 3° Be., where it is left for 10 or 12 hours. It is then taken out and after having been well drained is entered in a bath of water at 144° F., and then rinsed in cold water. The material is next entered in a strong solution of sulphuric acid where it is left for one or two hours and again rinsed. By a repetition of this procedure the color is improved. When an especially light shade is desired the jute is treated in a solution of Marseilles or vegetable soap after bleaching. The temperature of the soap bath should not be over 122° F., otherwise the tannin in the fibre will be turned yellow.

Another process consists in treating the scoured jute in a solution of hypochlorite of soda, which has no injurious effect on the fibre. On removal from this bleaching bath the jute is well rinsed in water and then entered in a weak bath of bisulphite of soda. The material is left in this bath for some hours and then taken out and rinsed well. The bisulphite of soda bath is not indispensable.

Jute can also be bleached by the following process: The jute is entered in a lukewarm solution of permanganate of potash. When the material has been colored brown by reason of the formation of superoxide of manganese it is removed from the bath and entered in a weak solution of bisulphite of soda which strips the color. After this the jute is entered in a weak acid solution and finally rinsed well in water.—Textil-Zeitung.

KNITTING DEPARTMENT.

For Knitting Mill Machinery, Equipment and Supplies, see pages 236 to 253. Also Buyers' Index.

THE KNIT GOODS SITUATION.

A prominent underwear and hosiery jobber, who has recently been in the market, informs us that during an experience of twenty-five years, he has never found it so difficult to buy merchandise as at the present season. A conclusion reached after carefully going over the matter with a number of prominent manufacturers convinces us that about 90 per cent. of the knit underwear that can be turned out during the year of 1907 is now under contract. A great many manufacturers absolutely refuse to take orders at any price for any delivery during the year, and while a few state they may be able to take a few duplicates for November and December delivery, it is found that in these instances they are basing their statements on their ability to run full every day until then to turn out their initial orders. Some few of these will be able to do this, but there are so many chances that their production will be cut into by their inability to get yarns, help, trimmings, etc., that it might almost be said that there are no goods to be had this year, other than those contracted for.

It was reported last week that some manufacturers of ladies' carded yarn ribbed goods were still open for business, but a careful investigation shows that even these people are sold up for the year and that about the only thing that can be bought is some stock lots of 7-pound goods that were carried over from 1906. So far as we can learn there was no change made in the opening prices of carded ribbed goods and we believe they were practically sold up on the basis of $2.00 for 6-pound; $2.20 for 7-pound, etc. This, of course, applies to May, June, July and August deliveries. These goods were sold for delivery during the first four months of the year at 5 cents a dozen less. This is the basis agreed upon by the so-called combination, and those who are in a position to know state that a lower price could not have been made, even without a combination, and that under today's yarn market it would be necessary to get about $2.10 for 6-pound goods.

Men's fleeces and ribbed goods are not being offered by any manufacturers or agents. Ladies' combed yarn goods are sold up and the sales agents at 346 to 350 Broadway have little to do these days, except to take care of some straggling details that are still coming in. Wool goods are also practically out of the market, so far as early deliveries are concerned. Small duplicates for late delivery may be placed at advances from 50 to 75 cents a dozen. The writer's attention has been called to the fact that the sales this season have increased on the medium and higher priced lines at the expense of the lower priced mixed goods.

Retailers throughout the country are reporting an increased demand during the winter for lighter weight goods for men, and as a consequence of this a number of new lines of superweights were shown for 1907 at $7.25 to $7.50, $9.00 to $9.50, $12.50 to $13.00. In these lines the trade shows a preference for the smooth finish worsted appearing goods similar to the finish on the Stuttgarter and Yaeger, German-made merchandise.

Scarlets have been in fairly active demand, notwithstanding the fact that all-wool scarlets to retail at $1.00 are hardly obtainable. Several lines of merino scarlets have been shown at $7.00 to $7.50, both for men and women, that reflect credit on the ability of our manufacturers to produce goods at a price.

It has been noted by several manufacturers that during the last year a large number of jobbing houses have started in business in all parts of the West, and it is quite surprising to see the number of new customers who came into the market in the month of December to place orders from such cities as

Seattle, Spokane, Bellingham, Butte, Salt Lake City, Ogden, Denver, and from a large number of cities throughout Texas and the Indian Territory.

HOSIERY.

The hosiery buyer of today has his share of difficulties. It is not alone the buying of the right lines at the right prices that gives him annoyance, but it is to get deliveries of the merchandise that he bought six to nine months ago. The deliveries of practically all the spring lines are very much behind and manufacturers explain the slow deliveries by their inability to get yarns, and to quite a large degree, to the fact that it is almost impossible to keep a full complement of help.

Fine gauge fashioned goods are exceedingly scarce both in women's and men's goods. This situation may be relieved somewhat another season by the million dollar corporation that is talked of being organized in Philadelphia to make fashioned goods. Certainly this is a season when it is possible for anyone who has the merchandise to deliver to get a fair, legitimate profit, and no excuse can be offered for anyone in the hosiery business not making money.

Buyers will probably be in the market for spring of 1908 considerably earlier than heretofore, hoping, by placing their orders early, to stand a better chance of getting good deliveries than if they delay until May and June, as in former years, and it simply remains for the manufacturers to get the lines ready early to have a short selling season.

Chemnitz reports that there is a decreased call for lace hosiery; as a consequence of this considerable lace machinery is being turned over to plain goods and manufacturers are, as a rule, as hard pressed to deliver merchandise now as at any time during the last year and a half.

It is reported that a number of the larger hosiery distributers have changed over their orders on women's and children's goods from white to tan, and according to all indications tan will be very good during the coming season. Advices from New York, Philadelphia, Atlantic City and the Southern resorts show that tans are being worn very freely, and while this may be taken as an evidence of their popularity throughout the country during the coming season, yet the chances are that white goods will be in active demand, particularly in grades to retail at 35 cents, 25 cents and under.

Embroidered goods continue in favor and manufacturers are having considerable trouble in turning out these goods, for the reason that the operators do not want to work on the small designs that the trade now demand. Aside from white, tan, and embroidered goods, there is a growing preference for spotted hosiery. These are taken in spots the size of a pea to those the size of a twenty-five cent piece.

So great has been the duplicating of light weight lines this year that some manufacturers who have been accustomed to getting out fall lines of heavier weights, have practically skipped the season and have made no quotations for fall, as they are sold up for the entire year on light weights.

Those manufacturers making wool lines report that they are all sold up, notwithstanding that some of them were in the market only for a week or ten days. This business was done on practically last year's range of prices, although some of the lower qualities show a slight deterioration.

A new tendency is noticed in the children's ribbed goods lines. There seems to be fewer calls for the heavier weights, the trade taking the fine ribbed, lighter weights in preference.

The Lee Hosiery Company are showing an exceptionally strong line of children's fine ribbed goods, made with fashioned feet, that get to the retail counters at 25 cents, and it is a difficult matter to find any imported goods of this description as the domestic goods are so much better value.

In men's half hose, tans are having the principal show, with greys, blues and emerald greens in fair demand. Embroidered and plaid cashmeres have sold freely during the last winter and a limited demand is noted for plaids for spring.

CHEMNITZ REPORT.

All mills in the district are running overtime, as much as the hands are willing to work, to get away the orders, many of which have been due for months. But even after the cases have left town they are often de-

layed, as the shipping companies cannot handle the immense quantities of merchandise coming in for every steamer, and especially in Hamburg a large part of the cases are left behind and shipped with delays of ten days and longer. In spite of the extra boats which the companies are running they are unable to keep up with the rush.

Orders are coming in with every mail and most makers are now filled up until the middle of next summer. In the fine gauge goods, the production is sold way ahead and buyers who will want such goods delivered by next November or December of this year will do well not to delay placing their orders any longer, but attend to them at once, as otherwise they will not get any goods at all. That better values in these goods should be offered later on is out of the question, but on the contrary, prices will be still higher, as the spinners have sold all their production for this year, and yarns will be higher if anything than they are now, whether cotton goes back in price or not.

Only in lace hose the American trade is holding back, while all other markets are buying them again freely. In these goods, especially the lower grades, orders will be scarce before long and the makers will most likely make plain goods on their machines, instead of making up a stock of laces. In fine gauge lace hose the demand is still good and is also very good with silk embroidery.

While embroideries in general are still selling very well, large orders have been placed on Scotch plaid effects in ladies' hose for the next fall season.

As to colors most used, they run for men's half hose in black, light grey, navy, tan, oxford grey in mixed yarns, and white, and for high colors, plum, purple, olive, helio and myrtle are taken a good deal.

For ladies' goods, of late quite a few orders are changed from black to white and also of the new orders a good percentage call for white. The next best colors are navy, tan, light grey, cadet shades and oxblood. Tans are becoming more popular than was anticipated and many of the orders that were changed some time ago to other shades, are reinstated again; also gun metal shades are bought freely. Split sole goods are as scarce as ever, and orders for these are placed far ahead at prices that no one expected would be paid.

Trade in gloves has not changed. Most of the makers cannot accept orders for another dozen of gloves for fall, as they will have a hard time to turn out the goods which they have already sold and most of these will come only with big delays.

Prices in gloves keep climbing steadily. All makers are working hard to ship, with as little delay as possible, the long gloves now overdue, being afraid that cancellations may come if the orders are not filled soon, in case the article should weaken.

THE GLOVE SITUATION.

The situation in the knit glove end is not a very promising one at the present time, for the reason that there is a decided tendency to get away from the so-called golf glove that was so popular two years ago. It is true that some manufacturers claim to have sold about as many up to the present time as they did during the corresponding time last year, but it is conceded by all that it has been much more difficult to do and has required a greater number of orders for the reason that those that have been taken have been much smaller than last year. Instances are related where in former years the salesman made only one trip to sell the production, but this year found it necessary to make three or four calls on the same territory to make a fair showing.

In reply to an inquiry as to what is displacing the knit golf glove, we should say it is the cashmere and cashmerette gloves and leather goods. Some very attractive lines of cashmere and cashmerettes are shown in ladies' goods made in fleece lined fabric at $1.95 to $2.00, and with silk and reindeer lining at from $3.60 to $3.85. There are also some silk lined cashmeres shown at $6.00 and $7.50, but the bulk of the business is being done on the lines that get to the retailer for half dollar goods. As to colors, black is in the lead; navy and brown are in fair demand, and of late we have noticed an increased call for wine shades.

There is still some business done on golf

gloves and some new patterns are being shown. These are all in closely knit fancy stitches and in plain color grounds with small, neat patterns in contrasting colors.

A high and dry situation exists in the silk glove and mitt business. This branch of the business is in the hands of very few people and they are without exception sold up for the coming season, and in fact, way into the fall, and have been refusing orders for some months past. Of course the fact that long gloves are in such active demand has cut down the production by dozens and made the situation more acute. The writer was recently shown through a mill in which this class of merchandise is made and had an opportunity of seeing both the tricot and Milanese cloth woven. This comes off the frames 168 inches in width. It is then dyed, steamed and dressed down to about 108 inches, in order to give it the elasticity necessary, and a piece of this cloth, which would make about 12 dozen pairs of the short gloves, will cut only about 6 dozen pairs of the long ones. The principal demand for these goods is in black and white, but there is a goodly quantity of tan, navy, and wine shades being made for the coming spring.

Paris reports indicate a slight falling off in the demand for white gloves, both in fabric and leather, and it is apparent that the coming spring will show a tendency toward colored gloves, even with white costumes. Very light tan and champagne shades will be much in demand.

In long leather gloves, only the suede are called for; kid and glace gloves being used principally in three-button lengths. All the long gloves in suede, silk, and lisle are made perfectly plain without any stitching on the backs and in 12 to 20-button lengths with large mother-of-pearl buttons. It is also predicted that the coming season will witness a good demand for long silk mitts. These are being shown with a variety of lace backs and also ornamented with gilt and silver beads.

Olive oil, used in the manufacture of soap, comes chiefly from Crete. In a good year the yield of oil reaches 50,000 tons.

ESTIMATING COST IN A HOSIERY MILL.

BY JOHN CLARK.

Below is one method of estimating cost in a hosiery mill, based on a daily production of 400 dozen ribbed hose:

Yarn at the market price, say 22c., 2 lb. per dozen	$0.44
Knitting, including ribbers, toppers and footers,	.12
Looping,	.12
Inspecting and mending,	.02
Dyeing, actual cost of dyestuff,	.055
Finishing,	.015
Finish mending,	.01
Pairing,	.015
Stamping, folding, boxing,	.01
Boxes, bands and labels,	.02
Supplies, including everything consumed, except fuel, and everything that wears out, such as needles, brooms, brushes, belts, parts, etc.,	.02
Waste,	.02
Fuel,	.02
Freight and trucking,	.005
General expenses, covering all day help, such as machinists, fixers, engineer, dyers, and wages of any whose work cannot be fixed by the dozen, office expense, taxes and insurance	.04
Salaries,	.015
Total,	$0.945

In order to keep a separate account of the work done in each department and to show the production and cost of each branch of the business in a mill turning off a production of 400 dozen a day, a report of production is made by each department, and the results arranged in tabular form as follows:

Knitting,	400 dozen
Looping,	375 dozen
Inspecting and mending,	425 dozen
Dyeing,	390 dozen
Finished,	400 dozen
Boxed ready to ship,	410 dozen

Have each department report if possible the sizes and styles. This report shows that the looping fell behind 25 dozen, taking the day's knitting as a standard for the day's

work. The inspecting and mending gained 25 dozen; the dyers fell behind 10 dozen; the finisher kept even, and the boxing department gained 10 dozen.

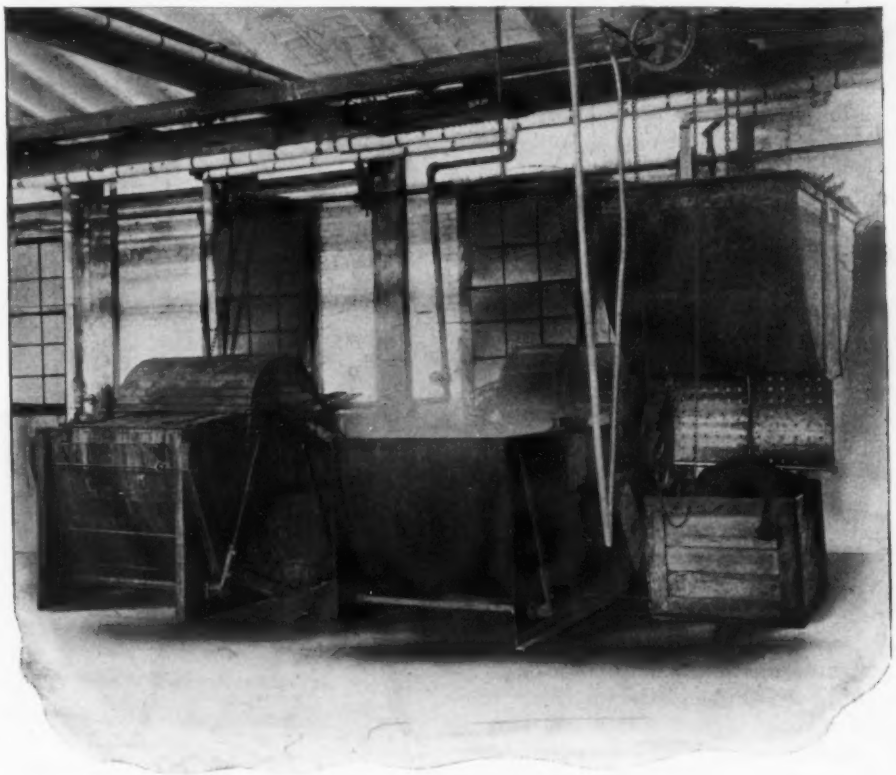
By this method one can keep track of the work and at the same time calculate from the pay roll the average cost of each department per dozen.

A SULPHUR BLACK DYEING PLANT FOR HOSIERY.

The question of the comparative merits of sulphur black and aniline black for hosiery is one that is discussed by manufacturers and dyers. The sulphur black process has been steadily gaining in favor and now some of the largest hosiery manufacturing and dyeing concerns are using both the aniline and sulphur black processes.

Like most new processes, in the early stages the machinery necessary to produce the most economical and successful results has not always been available, and undoubtedly one of the causes for some of the failures to dye hosiery successfully by this process has been the lack of machinery that would bring out the bloom of the black. Another important element with any process is of course the labor expense, and machinery should be so arranged as to save labor and wear and tear.

Smith, Drum & Co., 2503 Coral Street, Philadelphia, became interested in the sulphur black process when it was first introduced and have worked steadily to develop a machine for this process which would meet all requirements. In the plant illustrated herewith they believe they are offering an outfit, that will fill the bill in reducing ex-



A SULPHUR DYEING PLANT FOR HOSIERY.

pense of labor, steam and dyestuffs to the minimum, and in turning out goods of thoroughly even shade.

The operation is very simple. There is one iron tank or machine for the dyeing, a wooden tank for washing and two iron cages holding the goods to be dyed. These cages enter each machine for the dyeing and washing operations. They are handled by means of a pneumatic hoist and trolley track, the operation of which is easily understood from the picture. Each cage has a door in the bottom which is opened by pushing a lever. When the dyeing and washing operations are completed the cages may be conveyed by means of a truck system whereever desired, the lever is pressed and the goods without any handling fall into hydro-extractor or truck as desired.

This system is working successfully in a number of representative mills and the builders will be pleased to furnish further information to any one interested.

AN IMPROVED KNITTING STOP MOTION.

E. H. Ludwig, president of the Wisconsin Knitting Mills, Manitowoc, Wis., is bringing out a new stop motion which he claims is applicable to any kind of circular knitting machine, whether the top part of the bobbin revolves or not. The stop motion is operated by electric current, which can be supplied by batteries, special small dynamo, or by a direct current from the light wires, at reduced voltage. It is claimed to stop the the machine when the yarn breaks, when a bobbin runs out, or for knots in the yarn. There is a special adjustable attachment that can be regulated so that small knots may go through without stopping the machine if desired. It is also claimed that it will stop for bent needles, latches out of order and other imperfections. When the machine stops the electric current is disconnected. It has been in operation for several months and is claimed to be giving excellent results.

Fig. 1 is a side elevation of the machine; Fig. 2 is a top view; Fig. 3, an enlarged detail illustrating the break device and also the knot device and the means whereby the circuit is closed by either of these devices.

Revolving with the central standard of the machine is a staff, which has at the top a head, surrounding which is a metal ring, carried by the head. Projecting radially from this ring are metal arms, which have guides for the yarn and which carry the break and knot devices. These arms correspond in position and number to the bobbins and more or less may be used accordingly.

The stop device for a break is shown in detail in Fig. 3. The yarn, y, is drawn from the bobbin through a guide-hole in the arm, and thence through a guide-hole in an upright on the arm, then through a tension device, thence through a loop at the inner

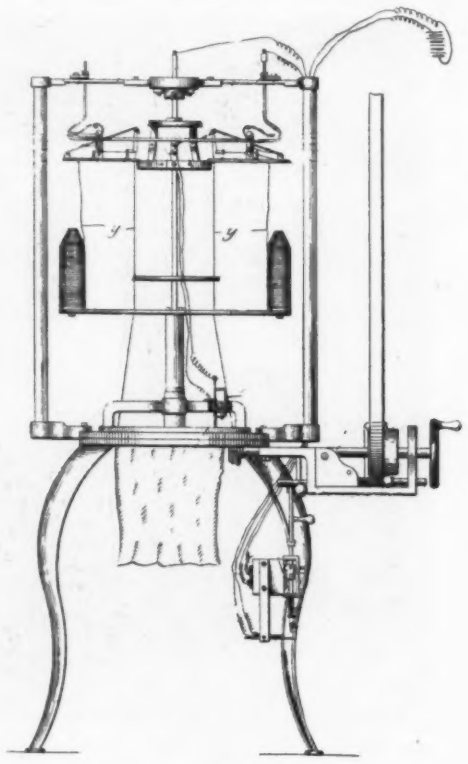


FIG. 1.

end of a spring-arm, and thence through a guide-hole down to the needles. The spring-arm consists of a piece of wire which is fastened at its outer end to a lug on the end of the arm, so that it tends to lift or swing up, being normally prevented by the tension of the yarn. It should be stated that the ring carries metal spring-fingers, which bear

against the rim of the disk so that the ring and the arms are charged from the wire. The ring is charged from the wire and is located in such position above the arm that when the yarn breaks or the end runs off the bobbin the released tension allows the wire to spring up and come in contact with the ring, as shown in dotted lines in Fig. 3, thereby closing the circuit.

The knot device is also shown in Fig. 3

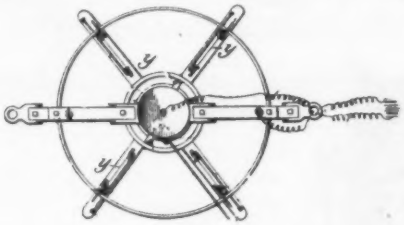


FIG. 2.

and consists of a finger projecting from the arm and having pivoted thereto a swinging finger, which carries a wire, bent so as to normally project above the ring. A spring is hooked around the finger and fastened to the finger, and a screw serves to adjust the distance and the lower end of the finger from the finger. The yarn, y, runs between the fingers, and the device is so set that normally the yarn will cause no movement of the swinging finger; but in case a knot or large imperfection in the yarn reaches the finger it will swing the latter inwardly, as shown in dotted lines in Fig. 3, bringing the wire in contact with the ring, which also closes the circuit.

The stop device for an imperfect fabric resulting from broken needle or other cause is specifically shown in Fig. 4. A swinging foot is pivoted to a bracket, secured to the arch in proper position to travel over the fabric on the rim of the cylinder. This foot carries a bent fork, the branches of which

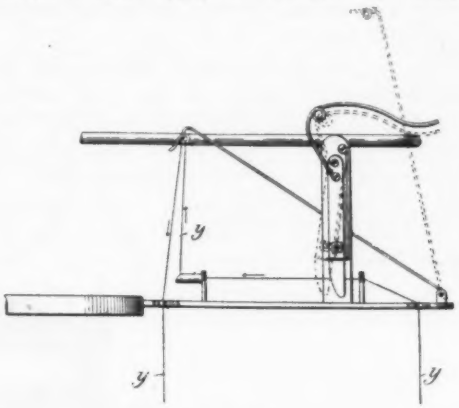


FIG. 3.

embrace a post, supported upon a piece of insulation on the arch. The foot is pressed

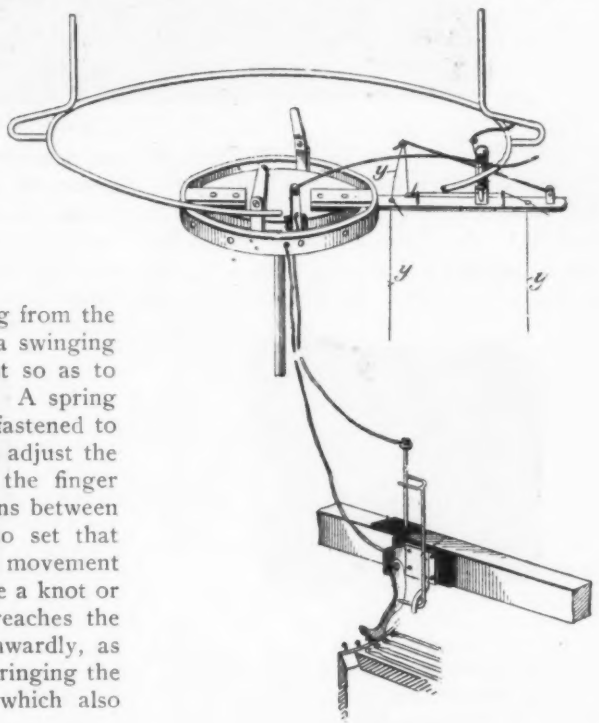


FIG. 4.

to contact with the fabric by a spring. The bracket and foot are connected by a wire to the ring and the post is connected by a wire to a metal piece set in a block of insulation

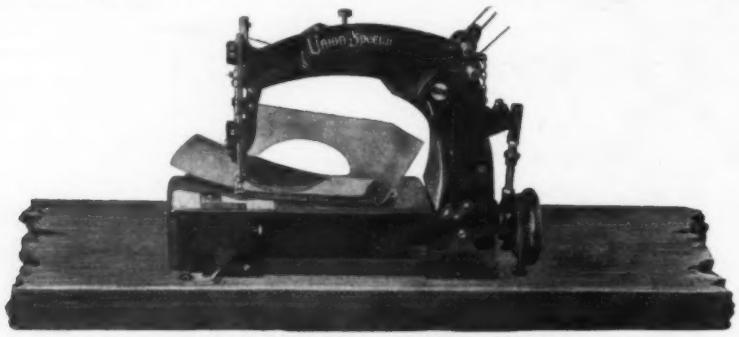
on the head. This piece carries an outwardly-extending wire brush or strip, the outer end of which rests in wiping contact upon the ring.

In case of a hole or drop-stitch in the fabric the foot will drop into the hole, causing one arm of the fork to come in contact with the post, closing the circuit and stopping the machine. If a needle should break or get out of order, the work in the machine will bunch up at such place, and when the foot runs over such spot it will lift the same and throw the other arm of the fork in contact with the post, closing the circuit.

The switch is closed when the latch is lifted and when the machine is going. When the circuit is closed by any one of the stop devices above described, the magnet attracts the armature, releasing the latch and allowing the rod to drop in consequence of the spring. This releases the latch and allows the spring to throw the belt-shifter and shift the belt to the loose pulley. When the rod drops, its lower point strikes the leaf, and opens the circuit at the switch, and the circuit remains open until the rod and latch are again lifted, which may conveniently be done by a handle, projecting from the rod.

A NEW UNION SPECIAL MACHINE.

We illustrate a new special sewing machine for the knit goods trade, just brought out by the Union Special Machine Co., known as style 6900-G. It is especially designed for "necking" undershirts. The same machine may be used to make either turned or bound necks. The accompanying cuts show its work in both cases. The machine has been built to meet the severe requirements of mill work and high speed. The demands for simple and durable construction have been kept in mind, and manufacturers believe that this new model accomplishes its purpose to a marked degree, and makes a distinct advance in the processes of knit goods finishing.



A NEW UNION SPECIAL SEWING MACHINE.

BOUND NECK.

TURNED NECK.

The operation of "necking" with this machine means, first, cutting out neck piece; second, stitching it to the back; third, or-

namental edge covering,—in one simple operation.

As with their other machines for the knit goods trade built by this company, the stitch is elastic. The special features are patented. Many orders have already been booked for this machine, and full particulars and specimens of work may be had from the manufacturers, whose main office and factory are on Michigan, Franklin and Kinzie Streets, Chicago.

The National Association of Hosiery Manufacturers.

We are informed that the membership of the National Association of Hosiery Manufacturers now embraces about 60 per cent. of the product of the United States. The personal visits of the secretary-treasurer, C. B. Carter, to both present and prospective members has been a good thing in bringing to their attention the details of the work and the advantages that may be obtained through co-operation. Mr. Carter has recently taken an extended trip through the West and South in the interests of the Association.

Streaks on Oxydized Hosiery.

Editor Textile World Record:

In your December issue is a question as to the cause of streaks on oxydized hose. In nine cases out of ten these will be found when the goods are oxydized face side out. The streak can be taken out by giving the goods an extra softening with olive, lard, or cocoanut oil, but this is almost as bad as the streak down the leg, if not worse, as it leaves so much oil in the goods that it stains the bands and boxes and causes the oily smell so much objected to by the trade, even in the cheapest grades. I have had this same trouble with streaks on the legs in oxydized hose, but for the last eight years I have used the following process on all grades of goods with entire satisfaction: The goods are oxydized wrong side out; after lisling turn to the face side, then chrome and soften in the usual way. This will give the goods a very desirable finish. H. W. Crowe.

Fleeced Undershirts for Export.

Editor Textile World Record:

Can you inform me if there are manufacturers of fleece lined underwear in this country who would be interested in making such goods for export to China, where there is a large market with which I am familiar? The undershirts are used in small sizes; some open in front like the coat shirt; some half way open. The length is about 25 1/2 inches; pearl buttons down the front; 15 inches across the chest; sleeves about 18 inches. While there is an immediate market for these goods deliveries could be arranged for on three to six months' time.

Canton (828).

If any of our readers are interested in this inquiry we shall be pleased to put them in communication with our correspondent.

Patterns for Knit Goods.

Editor Textile World Record:

Do you know of any firm which makes paper patterns suitable for knit goods, such as Norfolk jackets, ladies' golf jackets, and such goods, which have to be cut to fashion size? Newport (829).

We are under the impression that most manufacturers of such goods work out their own patterns. We have published in a previous issue tables of sizes for sweaters and underwear, which might form the basis for such patterns. We should be glad to hear from anyone making such patterns for sale.

Knitting Woolen Yarn.

Editor Textile World Record:

Enclosed is a sample of the 80-grain yarn that we use on our 4 1/4-inch 68-needle knitting machines. We have a great deal of trouble with the latches not working well when making the heel and toe. Is the fault with the yarn? It is made of 25 per cent. cotton and 75 per cent. shoddy and waste. We use the latest automatic knitters, also 7/8 knitters. The yarn knits better on the 7/8 machine when making the heel and toe than on the full automatic machines. Why is this?

West (795).

It seems to me that it is up to the knitter to find out whether the trouble is in the yarn or the machine. I am inclined to think that most of the trouble is in the yarn as the sample submitted would indicate this. I think better results would be obtained if the yarn was twisted just a little more, and I have found that woolen and merino yarns work much better when run over a piece of waste saturated with oil. If I had a sample of the work and knew the make of the machine I might be able to offer some suggestions as to how to

overcome the trouble, but as it is now anything I might say would be mostly guess work.

Once I had about the same trouble, only mine was on a finer grade of goods than this and after a lot of wear and tear on my religion I discovered it was caused by the sinkers cutting the loop when the machine was on the back motion. After adjusting them properly the trouble ceased.

Milton.

After examining the sample of yarn enclosed I should say that the trouble in not making a good heel and toe on full automatic machines is that these machines have more drawing power than the 7/8 knitter. The latest full automatic machine is a very poor machine for making low grade goods. The yarn would be all right if it could be given a little more twist, but I would advise the use of a little stronger yarn for the heel and toe, say 35 per cent. cotton and 65 per cent. shoddy and waste, and give as loose a tension as possible on the machines. Crawford.

If the yarn runs all right in the leg and foot and causes trouble only when forming the heel and toe, the trouble must be in the mechanical adjustment and not with the yarn. When a reinforcing yarn is used in the heel and toe care should be taken not to use too heavy yarn, also to see that the stitch is adjusted properly when changing to heel and toe to allow for the extra yarn. The breaking of the latches may be due to the latch ring being out of adjustment, or the sinker cam or possibly the sinker ring not being set right. Any of these parts not being properly set would cause the trouble mentioned, especially the latch ring and the sinker ring. I do not see why there should be more trouble with the full automatic knitter than with the 7/8 automatic, unless there are conditions existing such as I have just mentioned. Possibly there is a difference of speed. The full automatic may be running much faster than the 7/8. But any up-to-date full automatic knitter of the diameter and number of needles given, properly adjusted, operating 84 revolutions per minute on the heel and toe, ought to produce satisfactory results with that yarn. Gil Blas.

Piece Work Prices on Knit Goods.

Editor Textile World Record:

Kindly give the cost of piece work on ladies' high neck, long sleeved shaped vests.

Elmore (801).

The prices given below vary slightly in the different mills, as some mills call for more work on the different operations. For instance, in folding some goods the folders do the inspecting:

	Cents a dozen.
Cutting	1¼
Seaming shoulders	4 to 5
Shelling	3 to 4
Lacing	4 to 5
Sewing in gussets	1½
Sewing in sleeves	2
Over-edging bottom	3 to 4
Over-edging sleeves	3 to 4
Taping	1½
Sewing on buttons	1
Button holes	3 to 4
Folding	3 to 4

Madison.

There are many different finishes used on different qualities of garments and for which the prices vary in proportion. Lacking information as to the quality of the garment for which prices are asked I will give the prices for an ordinary cotton vest, 3-button front, shell trim, 39-cent quality:

	Cents a dozen.
Cutting (bodies, sleeves and gussets)	4
Hemming (over-edging bodies and sleeves)	2
Turning	1
Seaming	4
Seam covering	3
Trimming	2
Shelling	4
Finishing (facing)	6
Finishing (lace)	2
Button holes	1⅛
Sewing on buttons	1½
Inspecting	3¼
Taping	2¼
Folding	1½

Seaming the shoulders, sewing in gussets, and sewing in sleeves should be done in one operation. Over-edging the bottoms and sleeves is also cheaper as one operation. The lace is sewed on by a shell machine on one side, which goes with the shelling at 4 cents a dozen. The other side is sewed by the finisher and is stated in the price list. Onota.

In our mill the following prices are paid:

	Cents a dozen.
Cutting	3
Seaming shoulders	1½
Shelling	5
Lacing	1½
Sewing in gussets	3
Sewing in sleeves	3
Over-edging bottom	2½
Over-edging sleeves	1½
Taping	Day work usually.
Sewing on buttons (per dozen buttons)	¾
Folding	1¼

Wabash.

Finishing Low Grade Woolen Hose.

Editor Textile World Record:

In finishing men's low grade hose we use a kicker fulling machine for fulling and scouring and have a great deal of mending to do. Is this on account of the yarn we use or is there a machine of more improved style for scouring low grade goods? I notice you mention a laundry machine on page 143 of your December issue. I would like some particulars about this machine. West (796).

The best machine for scouring or fulling low grade goods is a laundry machine, such as is used in all laundries. For low grade goods use about 20 pounds of neutral soap to 40 gallons of water; scour for about 10 minutes. To full low grade goods without injury, draw off the water and add plenty of soap, then full for 10 minutes. It is the soap that saves the goods. Crawford.

I always use a kicker fulling machine for fulling, but I never scour in the fuller. I cannot account for the great number of menders unless there is a piece of loose wood on the hammer or the body of the machine. If they come only at intervals it might be a nail or tack in the fuller, or some mender through carelessness has left a needle in a stocking after mending. It is astonishing how many menders a needle will make if allowed to get into the fuller in this way. The fulling machine should be examined carefully after each batch as too great care cannot be taken with machines of any kind. When one is not on the spot to see the machines or the goods it is very hard to give exact information. If the yarn knits perfectly and runs well on the knitter it is all right, without a doubt, so don't trouble the yarn as the fault is in the machine somewhere.

I would not advise a laundry machine for fulling unless it is for a very small production of all wool goods, as if the goods have to be fulled for any length of time they are liable to have fuller marks. In the answer to the question in the December issue I gave the laundry machine for a production of 60 dozen a day all wool. If it had been for a mill of 300 dozen a day I should have given besides the laundry machine a hammer and fuller. The laundry machine is for scouring before fulling, as I have found from experience that I can get much better results that way. First the goods are put in the laundry machine, then into the fuller and fulled to the required weight, put back in the laundry machine and washed well in lukewarm water until free from soap, then run through a cold water bath. This I find gives the best results on all classes of wool and merino hose, as if soap is left in the goods it gives a harsh feel and makes them difficult to finish, and at times the finisher is blamed for a poor finish when it is the fault of the dyer in not getting the soap out after fulling. Of course the dyer will say this is not so, but as the finishing of woolen hosiery is a very popular subject just at present I should like to discuss it through your paper with any dyer or finisher for the benefit of the readers of the Textile World Record.

H. W. Crowe.

KNITTING MILL NEWS.

New Mills.

*Canada, Carleton Place. Operations have been started by Bates Innes, making men's ribbed underwear, paper makers' felts and mangle blankets. They operate a plant of 4 sets woolen cards, 17 looms, 9 knitting and 12 sewing machines. Have taken over the plant formerly run by the Canadian Woolen Mills Co. and have installed new machinery. Product is sold direct. Plant is also equipped with a dye house.

New York, Brooklyn. The Metropolitan Knitting Mills with J. Wietzer as proprietor, has started up a plant for the manufacture of sweaters, etc., at 150 Grand St. The production is sold direct.

*Ontario, Hamilton. The Zimmerman Mfg. Co. has been incorporated with capital stock of $300,000 for manufacturing men's and boys' balbriggan underwear. Adam Zimmerman, M. P., is president of the company; A. F. Zimmerman, treasurer; J. S. Thomson, general manager and P. M. Smith, superintendent. The mill upon which they will start building about March 15th is expected to be completed about Aug. 1st, and will be equipped with electricity. Richard L. Baker Co., Toronto, will sell the product.

*Pennsylavnia, Gouglersville. E. S. Hartman & Co. is a new concern operating plant at this place making men's half hose, 144 needle. They have an equpiment of 20 knitting machines and sell product direct.

Pennsylvania, Philadelphia. The New Process Gas Mantle Co., has rented the building at 31 Bank St., in which they have installed 5 latch needle knitting machines and other machinery for the manufacture of Incandescent Gas Mantles. H. Polasky is the proprietor and 40 and 36 six-cord and 40 three-cord cotton yarns are used in their operations.

*Pennsylvania, Philadelphia. An application for a charter has been made by Moses Leopold, J. Fred. Leiberman, of Milton, Pa., Lisle Leiberman, Max Leiberman and William Sullivan, well known as a manufacturer of hosiery at Second & Somerset Sts., for the Bee Knitting Co. The company is now in operation at Jasper & York Sts., in the Bromley Mills, in which they have installed the machinery formerly used by Mr. Sullivan in his mill at 2nd & Somerset Sts. The new company will manufacture cotton and woolen hosiery.

Pennsylvania, Philadelphia. The Lion Hosiery Mills is the name of a new concern which is equipping the fourth floor of 1627 North Mascher St. with 15 knitters and 3 loopers for the manufacture

of misses' ribbed hosiery, which they will sell direct.

*Pennsylvania, Philadelphia. The Brown-Moore Hosiery Co., the new million-dollar concern of which mention hasbee n made in a previous issue, has placed an order for sixty Schubert & Salzer full fashioned hosiery machines of 18 sections each with Mr. Otto Walther, of Philadelphia, the largest individual order ever placed in this country for this kind of machines. The new mill, for which a lot has been purchased at 2d and Westmoreland Sts., will be ready for the installation of machinery about September and by January 1st of next year will be in operation with two-thirds of the above equipment of machines. The product will be sold through Messrs. Harrington & Waring, commission merchants of New York City, who are financially interested in the new enterprise.

Pennsylvania, Philadelphia. The Reliable Hosiery Co., recently mentioned by us as having started at Mascher and Turner Sts., has a capital of $100,000 and the following officers: Albert Walker, president; R. B. Mills, treasurer and Samuel W. Burgess, vice-president and manager. They will commence their operations with 36 knitters which they will operate on high grade seamless hosiery which will be sold through Steele & Carruthers, 256 Church St., New York. They buy 2/40 to 2/80 and 60/1 to 80/1 cotton and lisle yarns. The plant is expected to be in full operation by March 1st.

*Pennsylvania, Reading. The Terrey Fashioned Hosiery Co., capital $30,000, will start operations March 1st making full fashioned half hose. Plant is equipped with 11 flat knitting and 12 sewing machines, operated by electricity. Goods are finished at the mill. Herbert Terrey is superintendent of the mill.

Pennsylvania, Reading. The Lewis & Schultz Underwear Co. has been organized for purpose of manufacturing underwear. The plant of the Estaugh Knitting Mills at Haddonfield, N. J., has been purchased. D. J. Lewis & Sons of Minersville are interested but the plant will be conducted separately from their mill.

*Rhode Island, Wickford. The Premier Worsted Company has been incorporated with capital stock of 75,000, and will operate the Wickford Worsted Mills, as previously reported. W. H. Parr is president of the company; E. C. Gammage, treasurer; and Mark Hough, secretary.

Enlargements and Improvements.

Alabama, Huntsville. The Rowe Knitting Company will add about 2,000 new spindles to the plant.

Connecticut, Addison. The Glastonbury Knitting Company will shortly build a new engine room, 20 by 30 feet.

*Connecticut, Plainville. New machinery is being installed in the Plainville Knitting Mill.

Illinois, Belvidere. The Burson Knitting Company, of Rockford, has established a branch plant here and will operate same as sewing department.

Illinois, Chicago. The Paramount Knitting Co. has increased the capital stock from $300,000 to $400,000.

Indiana, Fort Wayne. The Wayne Knitting Mills are installing 26-18 section full fashioned hosiery machines (Schubert & Salzer) ordered from Otto Walther, Philadelphia, representative.

*Massachusetts, Lowell. The new mill for the Shaw Hosiery Company is expected to be ready for occupancy by April 1st.

Massachusetts, Northampton. The McCallum Hosiery Company will, in a short time, have installed in their mill a set of machines for the manufacture of lace silk hosiery, which machines are the finest ever built by Schubert & Salzer, either for Europe or this country and in fact are the only ones of the kind ever imported by Mr. Otto Walther, of Philadelphia, Pa., the American representative of Schubert & Salzer.

*Massachusetts, Pittsfield. Contract has been awarded for election of the new factory addition, 40 by 80 feet, one story, for the Musgrove Knitting Company.

*Michigan, Bay City. The World's Star Knitting Co. has started work in the new addition recently completed. They have added 75 new knitting machines and finishing machinery. Now have total of 150 knitting and 20 sewing machines, making seamless hosiery of all kinds and ladies' and men's ribbed underwear, also union suits.

Minnesota, Mankato. The Mankato Mills Co. have recently installed two new sets of cards in the mill, also 10 new ribbers, 10 full automatic knitting machines and a new winder and dryer.

*New York, Albany. The Harder Manufacturing Co. will start operations in their new mill at Rensselaer about March 1st. Operations will start with about 300 people.

*New York, Albany. The Fuld & Hatch Knitting Co. is seeking a suitable site for purpose of locating a plant for spinning their own yarns. It is proposed to have the plant in operation in the spring.

New York, Brooklyn. Julius Kayser & Co. are installing 6-14 section Schubert & Salzer machines for manufacturing full fashioned silk hosiery and have placed order for 4 additional ones, through Mr. Otto Walther, American representative.

*New York, Cohoes. The Troy Knitting Co., reported to operate the John H. Murphy Mfg. Co.'s plant, will equip same with 10,000 spindles and 25 combs for making 20s to 40s yarns. J. W. Taylor is superintendent and buyer.

*New York, Philmont. Operations have been started in the new cop yarn mill erected by the High Rock Knitting Company.

New York, Sherburne. The Canasawacta Knitting Co. is to increase the capital stock from $25,000 to $100,000.

New York, Syracuse. The Oak Knitting Company is to erect a new building, 150 by 50 feet, four stories, for a warehouse.

*North Carolina, Randleman. The Randleman Hosiery Mills Co. has recently been organized with capital stock of $27,700 and is a consolidation of the Randleman Hosiery Mills and the Pearl Hosiery Mfg. Co.'s plant. A. N. Bulla is treas-

urer of the company and T. J. Bulla, superintendent.

North Carolina, Raleigh. The Martin Hosiery Mills are to build a dye house with capacity of about 600 lbs. daily. Additional knitting machines may be instaled later.

*Pennsylvania, Bethlehem. The Doylestown Hosiery Co. has leased the Hanover Manufacturing Co.'s plant at this place and is operating same as branch mill.

*Pennsylvania, Lyons. Operations have been started in Kutz, Kieffer & Kutz' new hosiery mill.

Pennsylvania, Philadelphia. An application for a charter has been applied for by Thomas E. Brown, president of the Brown Knitting Co., Henry Brown, William Brown; Daniel F. Harrington and William L. Warring of the firm of Harrington & Warring, New York; W. Park Moore, treasurer of the Brown Knitting Co. and Leonard M. Addis, for the Brown-Moore Hosiery Co. It is said that this new corporation will have a capital of about $1,000,000. The company will take over and operate the plant now run by the Brown & Hunt Co., and have recently purchased a plot of ground at Hancock and Westmoreland Sts. on which they will erect a new building into which they will remove when the structure has been completed. The officers of the company will be Thos. E. Brown, president; H. Brown, vice-president; W. Park Moore, treasurer; L. M. Addis, secretary and William Brown, Manager.

Pennsylvania, Philadelphia. The Ellis Hosiery Co., who have been conducting a plant for the manufacture of hosiery at 329 Pine St., with a capital of $70,000, have recently purchased the business of Lessig & Harrison at 1907-9 North 6th St., which they will consolidate with their plant on Pine St., using the down town quarters for warehouse purposes. Messrs. Ellis Bros., who are well known jobbers at 533 Market St., who are the proprietors of this enterprise, desire to announce to the trade that in purchasing this plant they have done so in order that they may be able to supply their many customers with the goods which they have ordered from them and which they have been unable to get from the many mills from whom they are buying. They also state that this mill after the spring of this year will be run on novelties only and that their purchasing from other manufacturers will be as large as ever and that they are in the market for any class of goods for which manufacturers are desirous of making a speedy sale. The capital of the Ellis Co. has been increased to $100,000 and the main office at 533 Market St., where A. M. Ellis will do the buying.

Pennsylvania, Reading. The A. W. Wolfinger Company is about to erect a new plant and will add considerable more machinery for manufacturing hosiery.

*Tennessee, Athens. The Athens Hosiery Mill is rebuilding dye house, oxidizing engine and boiler rooms. The plant is equipped with 90 footers, 70 ribbers and 24 loopers.

*Utah, Brigham City. We have been advised that John Anderson, now operating 8 machines, making ladies' and men's union suits, will install machinery for making cotton and wool batts and quilts.

Utah, Salt Lake City. The Salt Lake Knitting Works are to increase the capital stock to $100,000.

*Virginia, Danville. The Danville Knitting Mills have purchased a three story brick building in which they will remove their plant about April 1st. A new dye house boiler and engine room will be built at the new location.

*Virginia, Danville. The Danville Knitting Mills will start operations about May 1st in the new building nearly completed. This plant, operated on men's, women's and children's hosiery, has an equipment of 125 knitting and 23 sewing machines. It has not yet been decided about additional machinery.

*Virginia, Roanoke. The Roanoke Knitting Mills advise us that they are increasing the capital stock to $100,000 and are making arrangements to start branch mills at Martinsville, Luray and Pulaski, with 150 machines at each place. They have erected a dye plant and finishing department at the mill here, where all the dyeing and finishing will be done.

*Wisconsin, Janesville. The Lewis Knitting Company, which recently increased the capital stock, is adding additional knitting and stitching machinery. This concern manufactures full-fashioned lace knit spring needle nainsook men's underwear.

Wisconsin, Portage. An additional set of cards have been installed in the Portage Hosiery Co.'s plant.

Wisconsin, Stevens Point. The Racine Underwear Mills are to increase the capital stock from $6,500 to $20,000.

Facts and Gossip.

Alabama, Anniston. E. L. Field, who has recently purchased an interest in the Anniston Knitting Mills, will hold position of secretary and treasurer of the Anniston Knitting Mill & Hosiery Co.

*Michigan, Pontiac. The Pontiac Knitting Co. has begun rebuilding their plant damaged by fire. The total equipment of their mill is 2 sets woolen cards, 120 knitting and 23 sewing machines. Wm. H. Damson is president of the company; Wm. C. Owen, treasurer and Frank Holmes, superintendent.

Minnesota, Minneapolis. The Schwartz Knitting Co. has removed their plant from this place to 462 Wabash Ave., Chicago, Ill.

New Jersey, East Orange. The Federal Felting Co. has been reported incorporated with capital stock of $50,000 for making felt goods. C. O. Geyer, F. C. Ferguson and A. W. Condit, are mentioned as interested.

*New York, Milton. Operations have been resumed in Bell's Knitting Mill, in charge of J. A. Skerry. Only samples of goods will be made at present.

New York, New York. The George Washington Stocking Company has been reported incor-

porated with capital stock of $20,000. Joseph and A. S. Sanders, 18 West 107th St., are interested.

New York, Oswego. It is reported that Geo. E. Farrell, formerly with the Ontario Knitting Co., is interested in a new mill to be built at either Oswego or Utica. It is probable that men's ribbed underwear will be made.

New York, Oswego. W. A. Clark will succeed George E. Farrell as secretary of the Ontario Knitting Co.

Pennsylvania, Chester. The Phoenixville Knitting Co. has been reported incorporated with capital stock of $5,000. Samuel Deninger, Frederick J. Ash and Charles Klenk are the incorporators.

Pennsylvania, Frackville. It is reported that Goeser & Delaney, of Danville, Pa., are contemplating establishing a branch knitting mill at this place, provided satisfactory arrangements can be made.

*Pennsylvania, Scranton. The Scranton Hosiery Mills, capitalized at $50,000, operate 85 knitting machines, making men's and infants' fine gauge socks. This plant is also equipped with a dye house. Operated by steam.

*South Carolina, Newberry. The Ashley Mfg. Co., formerly the plant of the Newberry Knitting Mill, is operating 61 latch needle knitting and 2 sewing machines on seamless half hose and women's seamless hosiery. This plant is equipped with dyeing and finishing department. Capital stock is $30,000; Jno. A. Blackwelder is president and treasurer and Buell B. Reid, superintendent. Product is sold through Hecht & Campe, New York.

The Newville Knitting Co. of Pennsylvania, which has recently started a branch factory at Harrisburg, Pa., is equipping it with the latest and most improved machinery. It has recently placed an order for three of the new single thread button sewing machines, which are being introduced to the trade by the Union Button Sewing Co. of 184 High Street, Boston, Mass.

Personals.

A. P. Foster has resigned his position with C. B. Alling at Derby, Conn., and accepted a position as overseer of spinning at the Madison Woolen Company, Madison, Me.

Thos. E. Wye of Highlandville, Mass., has accepted the position as overseer of knitting for the Coupe Mfg. Company, Dunnsville, Ontario, Canada.

Clarence Pennington, overseer of knitting at the Worcester Knitting Mills, Millbury, Mass., has severed his connection with this concern and accepted a position as superintendent of a knitting mill at Utica, N. Y. John Mansfield, second hand at the Worcester Knitting Mills, has taken Mr. Pennington's place.

T. Tandler, a member of the Crown Knitting Co., Phila., Pa., will withdraw March first, and the business will be carried on by Wm. Thusraing and N. Tandler.

James Thomson, employed at the Lawrence Knitting Co., Lawrence, Mass., has resigned his position; so also has Percy M. Smith, draftsman for the same company. They have organized a company to manufacture balbriggan underwear at Hamilton, Ont., Canada.

Aaron Kidd has resigned his position at the McKinnon Knitting Mills, Little Falls, N. Y., and has been engaged by the Draper Co. at Hopedale, Mass.

H. H. Oder of Hamilton, Ont., Canada, has accepted position as overseer of knitting with the Trunbull Co. of Gault, Ont., Canada.

W. S. Lowe has accepted a position as overseer of knitting with Cook, Emert & Co., Somerset, Pa. Was formerly employed at Frank Stewart Hosiery Co., Laconia, N. H.

Daniel E. Coffey has accepted a position of overseer of spinning with A. H. & C. B. Alling of Derby, Conn. Was formerly employed at West Swanzey, N. H.

George Vosburgh, superintendent of the Clayville Knitting Co., has resigned. E. W. Spore, formerly superintendent at Toronto, Canada, will succeed Mr. Vosburgh.

Llewellyn Williams, overseer of finishing at the Glenark Knitting Co., Woonsocket, R. I., has accepted a position with the Pioneer Woolen Mills, Detroit, Mich.

John Casey has accepted the position as overseer of carding at the Middlesex Knitting Mills, Camillus, N. Y. He was formerly employed at Dryden, N. Y.

Williard Ashley, overseer of carding and spinning at the Faith Knitting Co., has accepted a similar position with the Kendall Knitting Co., Oswego, N. Y.

Clarence Pennington has accepted a position as overseer of knitting at the Fort Schuyler Mills, Utica, N. Y. He was formerly employed at the Worcester Knitting Mills, Millbury, Mass.

W. H. Craig has accepted the position of night superintendent in the John K. Stewart & Sons Knitting Mills, Amsterdam, N. Y.

Walter Whitefield has accepted the position of overseer of weaving with the Terry Mfg. Co., Waterville, Me. He was formerly employed at the Maine Woolen Co., Old Town, Me., but more recently at Plymouth, Mass.

William H. Berwood has accepted the position of overseer of spinning with the Groat Knitting Co., Scranton, Pa. He was formerly employed at the Madison Woolen Co., Madison, Me.

George W. Cottrell has accepted a position as overseer of knitting with the Vermont Hosiery & Machine Company's new mill at Northfield, Vt. On account of the machinery not having reached its destination Mr. Cottrell has not as yet started work.

Thomas McGuire has accepted the position as overseer of knitting at the Hope Knitting Co., Cohoes, N. Y. He was formerly employed by Barnett & Aufsesser Co., Cohoes, N. Y.

New Machinery and Processes.

This department is designed to present from month to month a brief mention of new machinery, devices and processes being brought out in this country and abroad, that are of interest to textile manufacturers. It is not a list of patents, but of improvements coming on the market. The idea being to present to our readers a systematic monthly record of new machinery etc., of interest to textile mill men.
We invite machine builders and others to send us such information for this department.

Automatic Thin Place Detector. Clayton & Bentley Co., 715 Prudential Bldg., Atlanta, Ga., are putting on the market a patented attachment for cotton looms, which is claimed to prevent automatically thin places in the goods. The builders claim that this device will positively detect and prevent thin places in weaving and will not tear the cloth.

Twisting Horsehair. A. Webb, Worcester, England. A machine for twisting horsehair with threads of cotton or other material. The horsehair is combined with a core and tie threads. The finished thread is used in the manufacture of haircloth for tailors' linings. It is claimed that the new machine enables shorter hairs to be used than has heretofore been possible.

Sliver Bleaching or Dyeing Machine. U. Pornitz & Co., Chemnitz, Saxony. A machine for bleaching or dyeing cotton sliver by which it is claimed that the material is not displaced during the operation and thereby obviating trouble during the spinning process.

Mercerizing Process. Hermann Schubert, Zittau, Germany. An improved process for mercerizing yarns to increase their lustre and elasticity. It is said that the yarns treated by this process are specially suitable for warps, particularly for fine counts and close weaves.

Cotton Gin. James Hodgkinson & Co., Salford, England, have perfected a cotton gin which is said to have an output of sixty pounds of clean cotton an hour, that either short or long staple cotton can be run without any adjustment of the rollers, and that the power required is much less than for gins of the ordinary type.

Napping Machine. Wm. Whiteley & Sons, Ltd., Lockwood, Huddersfield, England, are bringing out an improved napper specially adapted for heavy fabrics.

Paper Yarn. Sachsische Kunstweberei Claviez Aktiengesellschaft, Adorf, Saxony. An improved method of making paper yarn which consists in cutting ordinary paper into thin strips and then running them through a machine by which they are first dampened and then twisted.

Warp Beamer. The Sachsische Webstuhlfabrik, Chemnitz, Germany, has recently brought out a beamer designed to wind the yarn on the beam at a uniform speed, regardless of the increasing size of the beam. A description appears in another part of this issue.

Yarn Sizing and Drying Machine. Dr. Walther Moller-Koltkamp, Werden, Germany. An apparatus for sizing and drying yarn on spools.

Yarn Finishing Machine. R. Bernheim, Pfersee, Augsburg, Germany. A device for sizing and finishing yarn and cloth by which it is claimed that the finishing material is applied with great uniformity throughout all parts of the warp or piece.

Dyeing Machine. Paul Fontaine, Troyes, France. A machine for dyeing yarn on cops and spools.

Regulator for Fallers. Societe Anonyme Vervietoise, Verviers, Belgium. A device to control the fallers of self-acting mules so as to ease the motion and prevent the breaking of the threads.

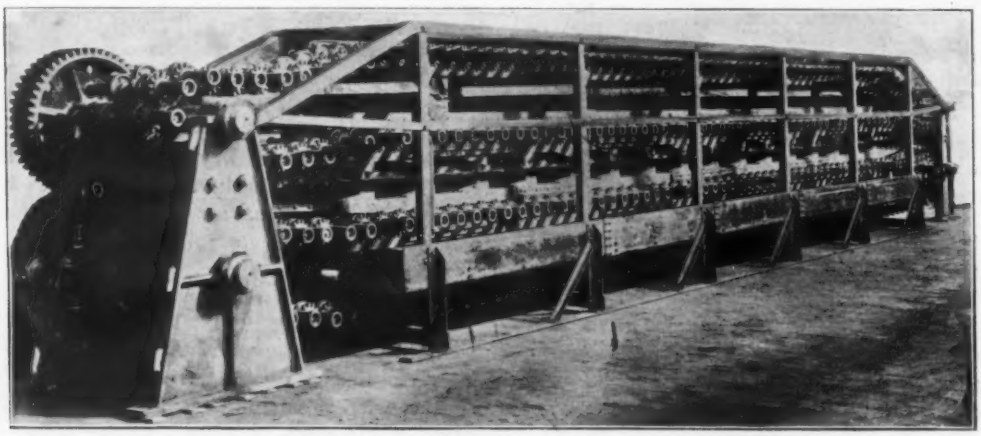
Horsehair Splicing Machine. A. Webb, Worcester, England. A machine for splicing horsehair and thus enabling short hairs to be used in the manufacture of wide goods.

Dryer for Sized Warps. Paul Fritsche Chemnitz, Germany. A drying machine for sized warps which is said to be capable of a large production at a low cost of steam and labor.

THE SHUMAN CONTINUOUS HANK MERCERIZING MACHINE.

The importance of the mercerization of cotton yarn has created a new branch of the textile industry, and naturally it has attracted the attention of the mechanical genius all over the world. In consequence of this, wonderful strides have been made in its development during the last five years.

Being attracted by its great importance and the chance for the improvement in the process, Frank Shuman, of Tacony, Philadelphia, has devised, constructed and patented a machine for mercerizing skein yarn in hanks, with a capacity of 500 pounds per hour, shown in the illustration.



THE SHUMAN CONTINUOUS HANK MERCERIZING MACHINE.

It is known as the Shuman Continuous process machine. As it stretches the yarn, it passes it through a deluge of liquid caustic soda. While still in that stretched condition, the yarn continues on its way through lukewarm and cold water, which bath washes out the caustic. Then it is immediately taken from the machine to its acid bath. In the matter of size the machine is 48 feet long, 5 1/2 feet wide, 7 feet high, and weighs about 100,000 pounds. It can be set to any stretch desired.

The great volume of work on this big mercerizing machine is handled by four boys, showing a great reduction in the present cost of the labor.

Mr. Henry C. Forrest, of Torresdale, Philadelphia, Pa., president of the company which owns the patents of the machine, has recently returned from Europe, where about a year ago he placed two of these machines, in the works of Messrs. Kerr & Hoegger, Manchester, an establishment which belongs to the British Cotton & Wool Dyers' Association. Mr. Adolph Hoegger, of Kerr & Hoegger, is chairman of the Association and his reputation as an expert of wide technical knowledge in all things pertaining to the manufacture and treatment of cotton yarns, lends special importance to the adoption of these machines by Kerr & Hoegger, after long continued experiment. It has attracted a great deal of attention, both in England and in this country, and their experience has been followed with interest by all persons connected with the business.

Mr. Forrest believes that the finishing of cotton yarns by mercerizing will eventually be done by the spinners.

The great difficulty hitherto has been that in order to produce a large amount of work, it required a number of machines which, of course, meant expense in labor and the handling of the work.

The two Shuman machines now in operation by the British Cotton & Wool Dyers Association are turning out a product at the rate of from 90,000 to 100,000 pounds per month.

These machines were built by H. W. Butterworth Sons & Company of Philadelphia and shipped to Manchester.

A NEW SINGLE THREAD BUTTON SEWING MACHINE.

Two views of the new single thread button sewing machine, built by the Union Button Sewing Company, 184 High Street, Boston, Mass., are shown herewith. This machine is a marvel to all mill men who have seen it in operation because of its simplicity of construction and efficiency of work, and the manufacturers believe it to be far ahead of all other button sewing machines on the market.

Fig. 1 gives a general view of the machine. Fig. 2 shows the working parts of the machine, and gives a good idea of the simplicity of the mechanism. It also shows the position of the machine for oiling and cleaning which can be obtained instantly, without any previous trouble of removing belts or chains.

This new machine is of the single thread type; consequently there are no bobbins to wind, or under shuttles, or under tension, to cause annoyance to the operator and expense to the manufacturer. This one item makes a large saving in expense as eliminating the under shuttle mechanism does away with the principal cause of breaking needles.

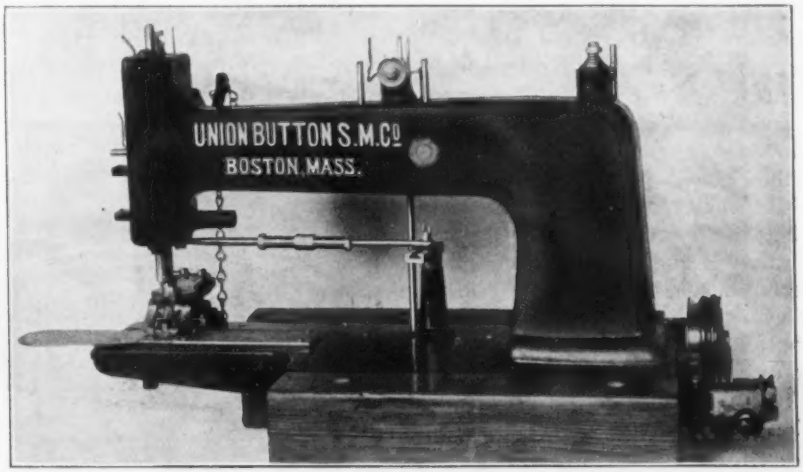


FIG. 1.

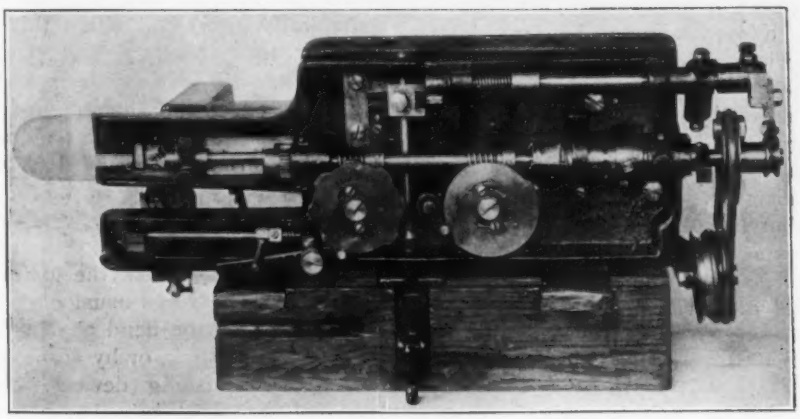


FIG. 2.

The manufacturers claim that this one feature saves 90 per cent. of the needle breakage, which is a necessary accompaniment of the two-thread machine with the under shuttle mechanism.

The most difficult problem for all builders of button sewing machines to solve has been to make a stitch that cannot be raveled back. After many years of experimenting this company have perfected and patented a method of sewing on buttons with this single thread machine that is believed to be as near perfect as can be made in this respect as in others. Samples of work may be seen at the company's office, also letters from users of them expressing their satisfaction in the highest terms.

Another valuable and novel device is the thread severing mechanism, by which it is possible to sever the thread close to the work after each button is sewed on, and that without the use of a knife or a cutting edge of any nature. After the button is sewed a knot is tied and by a patented thread breaking device the thread is clamped in such a manner as to prevent the work being removed from the machine until the thread is broken against the knot. This thread breaker is a very simple, but positively working device, which will commend itself to every manufacturer at once, as it is well known that it is almost impossible to keep a cutting edge in working condition for any length of time.

The manufacturers have a long waiting list of orders, but have recently enlarged their plant and expect to take care of their increased business with promptness. They will send samples of work and quote prices on request.

The United States, which produces three-fourths of the world's cotton, imported last year from other countries nearly 11 million dollars' worth of raw cotton and over a million dollars' worth of cotton waste.

Ghent is the principal cotton spinning centre of Belgium and has 22 cotton spinning mills. The number of spinning and twisting spindles is over 800,000.

AN IMPROVED SPINNING RING.

The Draper Company at Hopedale, Mass., have recently perfected an improved system of finishing spinning rings and they are now putting on the market the Thompson patent mirror finish spinning ring. Some years ago they perfected a system of making rings round, and this latest improvement they believe to be even more important.

The Thompson patent gives the ring an inside surface polish that reduces traveler

friction so that it starts like an old ring. The manufacturers claim that this ring will wear out in starting up but one-half the travelers used on other rings. It therefore not only saves time, labor, and expense while breaking in new frames or new rings, but it also allows a high speed of the frame. If frames can be started at a high speed less spindles will be required to give an increased output.

In their announcement the manufacturers say that spinning rings usually receive their surface finish by the hand application of oil and emery on a stick, or by automatic metal contact of burnishing devices. An extra charge of two cents has always been made for burnished rings, and they have always been ready to furnish burnished rings to customers who would pay the cost. Both hand polished and burnished finish cause severe friction on the ring surface, with grave chance for overheating and taking out of temper. Their new process of polishing does away with all chance for overheating as it stretches the polishing process over

hours instead of seconds. It also gives a smoother finish than the burnish process. The system used is entirely new in the art, and amply covered by patents both for method and apparatus. It is a continuous machine application of polishing material under natural forces, the extent of treatment depending on the time the machine is run and not on the whim of an individual.

These new finish rings are sold at regular prices without extra charge. All the rings will be treated by the round process also, but they will still charge two cents extra for the selected rings practically perfect as to roundness.

The value of the merchandise shipped from the United States to Porto Rico increased from 12 million dollars in 1904 to 22 millions in 1906.

Ninety per cent. of the merchandise entering Porto Rico is brought from the United States; of that entering Hawaii 81 1/2 per cent. comes from this country.

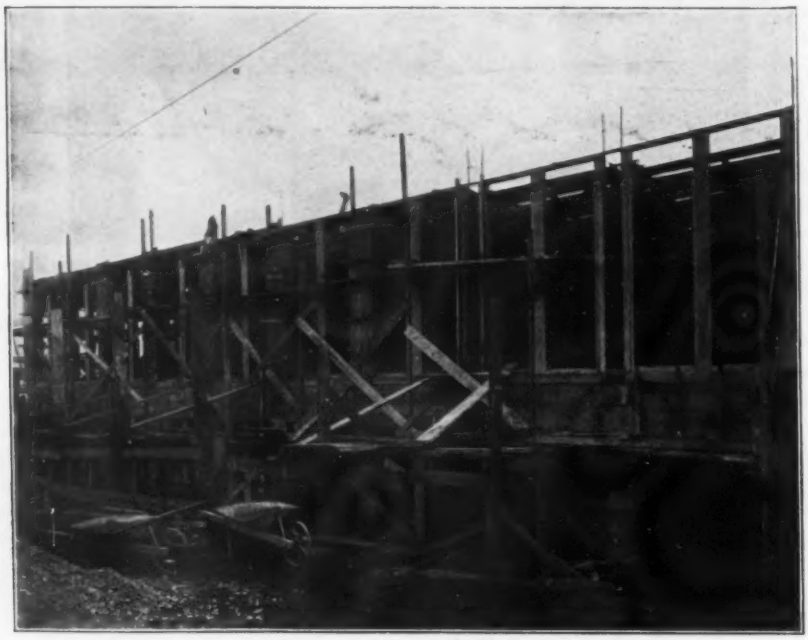
REINFORCED CONCRETE CONSTRUCTION.

Probably no factory owner who contemplates an extensive addition or a new building neglects to consider the question of reinforced concrete construction. At the recent meetings of the different manufacturers' associations no subject has roused more interested discussion than this.

A mill engineer who has made a specialty of this line of work gives us some data concerning a new factory building recently erected for the United Wire and Supply Co., Providence, R. I., who, after much investigation, decided on this type of construction for their new addition in Pawtucket. The conditions are quite similar to those prevailing in cotton and woolen mills. There are few manufacturing buildings that are subject to so severe a test, largely due to the continual vibration of their machinery. One of the great advantages claimed for reinforced concrete construction is that much of the wear and tear and depreciation due to these causes is overcome with of course

A VIEW SHOWING FORMS FOR FIRST FLOOR.

THE INTERIOR OF A CONCRETE MILL BUILDING.



VIEW SHOWING THE FORMS FOR A SIDE WALL.

the advantage of permanency. This very feature of permanency, however, demands that special care should be given to the planning and designing of the building for mistakes are not so easily rectified as in wood or brick construction.

This mill building in Pawtucket is 104 feet long by 72 feet wide, two stories high. The beams are 10 1/2 inches by 22 inches to top of floor with a 4-inch floor slab, including a 1-inch granolithic top floor. There are 13 bays of 8 feet centres with beams spanning 25 feet; the columns are 14 inches square in first story and 12 inches square in second story.

The building is designed for an addition of two or more stories. Considerable difficulty was found in building the foundations, as the land, formerly an abandoned ledge, was filled with loose ashes which contained considerable decayed matter. It was first intended to make a spread footing under the columns, but this was not found feasible as the soil would be likely to settle and shift, therefore the only practical thing to do was to go to a fairly suitable hard pan, which was found after digging about 30 feet. The soil at this level was fairly good and as long trenches were dug for the foundation a careful examination could be made of the various stratas of filling.

The engineer decided, as an additional precaution to prevent settling, to figure a low weight pressure per square foot on the earth. The footings were then laid 6 feet square with columns below basement grade, 20 inches by 20 inches. There were no wall footings required as the walls were entirely supported by the pilasters; the walls therefore were not required to extend but 12 inches below finished grade, or 12 inches where floor came below grade. This method of construction is found to be a great saving of expense and is one of the principal advantages of reinforced concrete construction.

A COAL POCKET OF REINFORCED CONCRETE.

The general appearance of the inside construction is similar to that of the regular mill construction, as is seen in the accompanying illustrations.

The posts and under side of beams are chamfered as are also the wall pilasters, and

are reinforced with 4 3/4-inch steel rods running vertically and hooped at intervals of 12-inch centres.

The beams are reinforced by 6 3/4-inch rods near the bottom of the beams with two rods bent up on end to take care of the shearing strains at the supports.

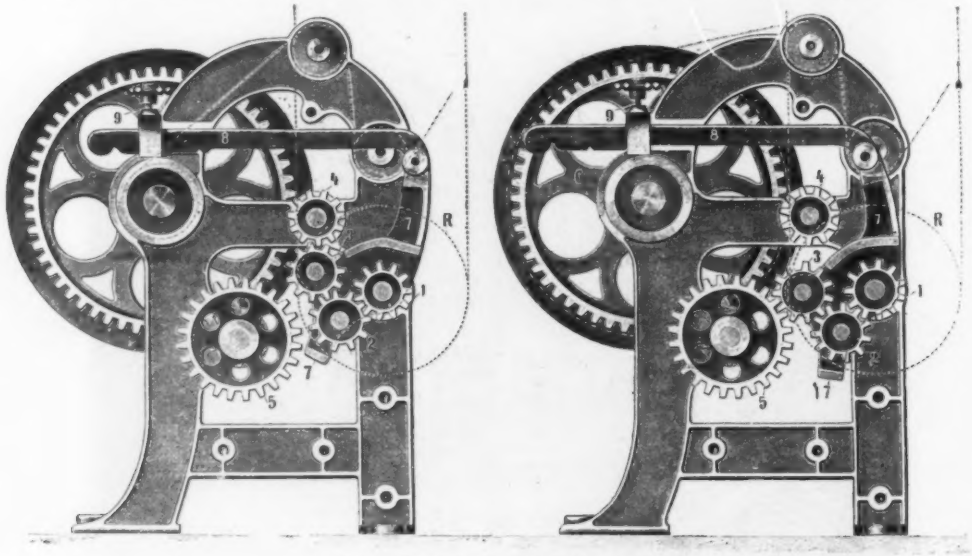
The walls are 4 inches thick, with horizontal steel reinforcements; floors are composed of 3-inch concrete floor with 5/8 steel rods 6 inches on centres, laid crossways of floor beams with a 1-inch granolithic top floor with 1/4-inch steel rods imbedded 5 inches on centres, laid crossways of building to prevent checking. Pipe sleeves were left in all wall floors top of beams at under side of floor for all piping and electric wiring. Square wood blocks, 3 inches by 3 inches, were cast in floor slab so as to provide fastenings for any additional wiring that may be required. The roof is formed by filling in with cinder concrete on top of floor to give the required pitch. The surface was covered with a plastic slate roof.

The building cost complete about $1.17 per square foot. One of the greatest single items of expense is in the cost of wood centring, this alone amounts to about 25 per cent. of the total cost and unless care is used in designing the building, this cost may amount to considerable.

With a complete set of plans and specifications and reinforcement details there is no reason why a building of concrete cannot be built by a general contractor, but there should be inspectors on the work at all times during the construction to guard against any displacement or omittance of steel.

Among the illustrations is a view of a reinforced concrete coal pocket.

These buildings were designed and are being built under the personal supervision of Adolph Suck, 179 Summer St., Boston, Mass.



A WARP BEAMER WITH VARIABLE SPEED.

A WARP BEAMER WITH VARIABLE SPEED.

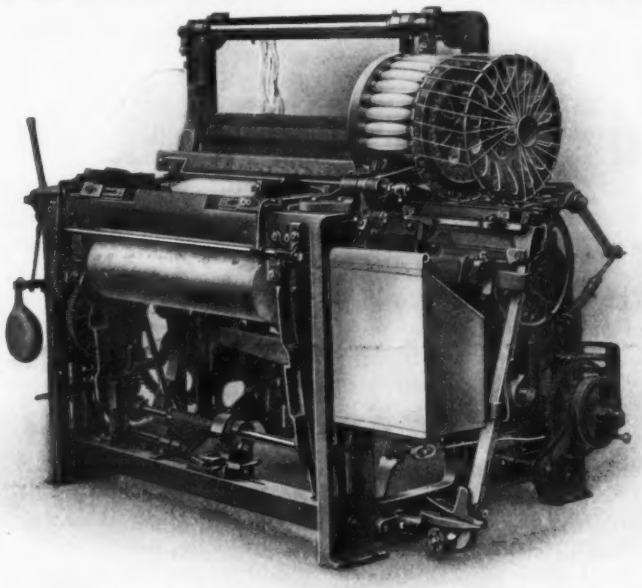
Ever since the modern warp beam was invented efforts have constantly been made to devise some means by which the speed can be reduced as the yarn beam grows larger in order that the yarn may be run on the beam at a higher speed at the start. By running the beam at a constant speed, the speed of the yarn increases as the yarn is wound, the result being that the speed of the beamer must be so regulated that the yarn may not be run at too high a speed at the

end of the process. The result of this is that at the beginning of the beaming the yarn is run much slower than is necessary.

To provide a practical device that will not be open to these objections the Sachsische Webstuhlfabrik, Chemnitz, Germany, has recently built the beam driving mechanism, shown in the accompanying illustration. The tight and loose pulleys, R, are mounted on a shaft carrying the pinion gear, 1. The movable bracket, 7, swings on the same shaft and carries two gears, 2 and 3, which remain in gear with the driving gear, 1. The main gear, 6, of the beamer is provided with two spur gears, 4 and 5. Gear 4 has 11 teeth, and gear 5 has 22 teeth. Upon starting to beam the warp the swinging bracket, 7, is in the position shown in Fig. 1, bringing the driving gear, 3, into mesh with the 11-tooth gear, 4, driving the beam at the highest speed. When the warp has been partly wound on the beam the gears are shifted by sliding the lever, 8, forward and bringing gear 3 into mesh with the 22-tooth gear, 5, and thus reducing the speed of the beam.—Oesterreichs Wollen und Leinen Industrie.

THE NEW MODEL "I" DRAPER LOOM.

This new design is intended for use on the same line of goods as the well-known "E" model. The fundamental idea in the design of this model is to allow the use of a larger warp beam so as to diminish the expenses attendant on the drawing-in of warps and starting up new warps at the loom. In developing the model the following changes have been incorporated:



NEW MODEL "I" DRAPER LOOM.

Sword can be removed without moving the rocker shaft; pick-arm cannot hit the sword when the lug strap breaks; the whip roll can be set lower than on model "E"; the larger pick cam gives easier pick; the pick shaft is of stronger design; the pick shaft boxes cannot move; the front box plates are secured by bolts; more room for the cloth roll; new binder finger adjustment; new shaft boxes; stiffer loom sides; more weight; the let-off arm is bolted to sword; larger feet; special beam pockets can be used; general adaptability to modern attachments.

There are 119 cotton factories in Mexico with 635,940 spindles and 20,364 looms.

Dyeing, Bleaching, Printing, Etc.

CHROMING ANILINE BLACKS.

BY F. ERBAN.

(In Faerber Zeitschrift.)

The amount of chlorate required to oxidize 100 parts of aniline salt has been variously stated as 18 parts and 38 parts, while the theoretically calculated quantity is 27.4 parts.

To settle this point it is necessary to ascertain whether in the aged black some of the aniline salt is converted into acetate by the aluminium acetate and whether a portion is liberated as free base. In the case of a steam black to ascertain likewise whether the whole of the aniline is transformed to ferrocyanide or whether some exists as free base. By experimental dyeings with a "neutral" oxidation black, and chroming with a neutral bichromate after drying and before oxidation, the greater part of the aniline is absorbed, giving greenish shades, but some is transferred to the chrome bath, forming black specks, which attach themselves to the fibre and cause the color to rub.

The lowest quantity of chlorate needed was found to be from 6 to 6 1/2 per cent. of the aniline salt, a smaller amount being insufficient to form the emeraldine. With this quantity, and treating afterwards with a 2 per cent. bichromate solution, a good deep black was obtained. The chrome bath, however, when used on successive lots, quickly became blackish, the first chromed samples being of a clean violet black, while the next became noticeably sadder and eventually quite brownish.

These observations indicated the presence in the bath of unoxidized and soluble aniline salts, the presence of which, however, could not be prevented, even by increasing the amount of chlorate to as much as 9.5 per cent.

Promising results were obtained by adding to the chrome bath definite quantities of the already used aniline bottoming liquor.

The effect of chroming in cold baths containing 2 per cent. bichromate alone, and with additions of soda, acetic acid, and sulphuric acid was tried. Alkaline bichromate gave the cleanest and bluest black, while the others gave blacks quite as deep but not as clean.

The concentration and temperature of the chrome bath greatly influences the shade. By increasing the strength much above 2 per cent. bichromate, the shade becomes correspondingly greyer. At a temperature above 144° F. the black is decidedly browner. When strong chrome baths are used, more aniline is extracted from the fibre, and is oxidized in the bath, giving a copious black precipitate.

An increase in the amount of chlorate had no beneficial influence. The aniline is thus oxidized to emeraldine only by the chlorate, on the concentration of which depends also the rapidity of the oxidation. It was further found that the manner of chroming has also a decided influence upon the results.

By rapid oxidation in special machines needing only small quantities of liquor, there is less opportunity for the formation of aniline black in the bath itself than by prolonged treatment as in a beck. The former method also gives cleaner blacks. On raising the chroming bath to the boil the liquor quickly becomes cloudy and colors white yarn immersed in it brown, an indication of the formation of quinone compounds.

By oxidizing for 24 hours, 48 hours, and 8 days, and then freeing the dyed samples from the substances still unfixed by extracting in warm water, the solutions were colored, and possessed the characteristic smell of aniline. On adding bichromate and acid to these solutions, a copious and flocculent greenish black precipitate resulted. To determine the influence of these soluble unoxi-

dized substances the samples were divided into portions, and before chroming some were washed in warm water, the others were left untouched, and both were then separately treated in neutral, acid, and alkaline bichromate solutions, immersing along with them samples of white yarn.

In all three chrome baths the samples which had been previously washed left the baths perfectly clear, and the white yarn was not discolored, whereas those which had not been washed turned the acid chrome bath a greenish black color, and colored the white yarn greenish grey owing to the formation of one-bath black. With regard to the shade given by those which had not been washed, those after-treated with bichromate and soda gave a violet black similar to that of the sample which had been washed and treated with neutral bichromate. This shows that the alkali not only hinders the formation of one-bath black, but also retards the reaction between emeraldine, aniline salt, and bichromate. When chroming the washed samples with 2 1/4 ounces bichromate per cubic foot, and working cold for a quarter of an hour, a clear violet black was obtained, which, however, did not increase in intensity by raising the temperature of the chrome bath to 140° F. The liquors remained quite clear in both instances. By incinerating portions of the samples of the washed and chromed blacks, and the unwashed and alkaline chromed samples, a white ash was obtained, a proof that emeraldine in the absence of aniline does not combine with or fix chromium. The blacks after-treated with bichromate and acid gave the best results. In all samples of the so-called Diamond black the ash after incineration is found to contain chromium, from which it is concluded that the black itself consists of two definite components, viz., a black formed by oxidation, and one-bath black formed by ultimately chroming.

The rubbing propensities of an aniline black are not prevented by treatment with bichromate solutions 4 to 5 per cent., and even by increasing the quantity of chlorate to 12 per cent. and chroming with 2 3/4 ounces bichromate to the cubic foot, acidified, at the low temperature of 176° F., only a poor weak blue black is obtained. After a quarter of an hour's working the bath remained clear, but by allowing the yarn to lie in the bath for 12 hours the yarn became colored a bronzy olive black and the liquor was dirty, pointing to the formation in the bath of one-bath-black and quinone compounds. But by increasing the amount of the chlorate to 18.5 per cent., both the shade of the color and its rubbing propensities were considerably improved.

With the employment of 22 to 23 per cent. chlorate the chrome bath remained clear and yellow, and the shade of the black was quite deep and the color did not rub, although the yarn suffered in strength.

A resume of these numerous experiments shows that to obtain by normal oxidation a black only slightly greenable, it appears necessary, if the chromate is to act on the emeraldine formed, that aniline must be present, and in a weak acid state.

Furthermore, the formation of single-bath-black always causes rubbing of the color.

To obtain a less greenable black and one fast to rubbing, a corresponding process of oxidation in the stove must be more fully accomplished by decreasing the soluble aniline salts remaining in the fibre, so that no great surplus exists after the transformation to emeraldine. Nevertheless, it is not possible to avert altogether the formation of one-bath-black, as on subsequently chroming some aniline salt is always dissolved off. By proper concentration and treatment it is possible to retard these disturbing intermediate reactions without interfering with the formation of the emeraldine. So far the investigations concern only a neutral black. With what may be termed a "basic," one in which some portion of the aniline exists as the acetate—by the addition of aluminium acetate—or one containing free aniline oil, somewhat different results are obtained.

When the same proportions are observed, the process of oxidation with the last named class of black is much more prolonged and requires relatively more chlorate, at least 18 per cent., and a higher temperature and more lengthy duration of oxidation. With this black there are also formed differently colored intermediate products which cannot,

however, be converted to black no matter at what stage the chroming is accomplished.

A black on chroming can only be got by increasing the temperature and lengthening the duration of the oxidation. If chroming is accomplished at an earlier stage of the process only grey to grey brown shades are obtained.

Again, by decreasing the quantity of chlorate to below 18 per cent. there is produced on chroming instead of a black only a dull grey, but on increasing the amount of chlorate the progress of the oxidation process becomes correspondingly accelerated.

By washing a basic black after oxidation the wash water is not colored yellow as happens when similarly treating a neutral black, but it becomes reddish.

On chroming for a quarter of an hour in a cold 1 per cent. bichromate solution and again washing, the latter wash water is at first yellow, due to the bichromate held by the yarn, then reddish, and if the yarn is then extracted with hot water the latter becomes colored dark red. The last named liquor remains quite clear while still hot, but on cooling a dark precipitate separates and falls out. From this it would seem there is a considerable formation of rosaniline compounds. The possibility of the presence of these, accounts for the olive and brown shades resulting after oxidation by the combination of the rosanilines with the emeraldine. But the behavior upon chroming at an intermediate stage seems to go against this assumption as, if it were true, the emeraldine formed ought to be convertible by chroming into black which, however, is not the case as the experiments have shown.

It is possible that there is formed a combination of the different grades of emeraldine with the rosaniline, which compound, after complete oxidation, is readily broken up by chroming, leaving aniline black fixed on the fibre along with the formation of soluble rosaniline.

By extracting the yarn with hot water after oxidation a strongly colored reddish brown solution results which is not at once turned black by the addition of bichromate and acid, although after a time a black precipitate forms showing the previous presence on the yarn of free aniline salts.

On treating the washed dyed yarn with a weak acidified bichromate solution the latter at once becomes darker, and the removal from the fibre of a soluble and oxidizable substance again takes place. The resulting blacks were substantially brighter, bluer, and much faster to rubbing than those not washed before chroming.

The difference between them may be rendered somewhat less by prolonging the period of oxidation.

Fastness to rubbing is very good so long as a clear chrome bath is maintained. The liability of these basic blacks to become green depends somewhat upon the temperature at which the oxidation process is carried out; a black oxidized at a lower temperature yielding after chroming a shade which is inferior to one developed at a higher temperature. A basic black mixture containing 18 per cent. chlorate applied to yarn ultimately oxidized until it becomes colored dark olive, yields on chroming in a special machine with a 2 per cent. bichromate solution for the start, with replenishments of 4 per cent. for each successive lot of yarn, a black which is much cleaner and bluer than the succeeding lots. Even by increasing the strength of the bichromate solution to 8 per cent. there is obtained no appreciable advantage, and the inclusion along with it of sulphuric acid renders the resultant black decidedly brownish. Much more satisfactory results are obtained if the chrome bath after once using is filtered before replenishing, and better still if an addition of a small quantity of the aniline bottoming liquor is made to the bath.

By further comparative treatment with bichromate and acetic acid, alum, copper sulphate, and chrome alum, in cold solutions through the machine, and also by a quarter of an hour's treatment in similar but weakened solutions at 140° F. in the ordinary beck, the first series gave an even and fine blue black, while the last named gave only uneven slates. It was also noticed that the influence of the chrome bath on the tone of the black was most noticeable when acetic acid was used. Again, by using a fixing bath containing bichromate, acetic acid, and aniline bottoming liquor, a black was obtained

which on washing colored the wash water pink. It is further noteworthy that the latter after-treatment when conducted in the beck, that is, diluted but warm solutions, yields on basic blacks brighter and bluer shades than when carried out on machines, that is, stronger but cold solutions.

Prussiate blacks, although oxidation blacks, cannot be economically produced by the ordinary oxidation method owing to the many difficulties and prohibitive cost. Ferrocyanide blacks are only in exceptional cases produced in the latter manner, whereas they possess great interest as steam blacks. These blacks require for their production an excess of chlorate and a high temperature during steaming.

The mean proportion of the constituents used in bottoming is:

100 parts aniline salt.
40 parts yellow prussiate.
48 parts chlorate.

If, however, the proportion of aniline be reduced by only 10 per cent. a black is no longer obtained even after final treatment with bichromate and acid, or bichromate and copper sulphate.

Steam blacks can likewise be produced from a mixture applied either in a neutral or basic state. In the first the aniline may be present as ferrocyanide or ferricyanide and chloride, and in the second as acetate or the free base. Suitable proportions for obtaining a good black after steaming are:

130 parts aniline salt.
105 parts yellow prussiate or
110 parts red prussiate and
25 parts chlorate.

By reducing the quantity of prussiate to a quarter that of the aniline salts and the chlorate to 10 parts, a fairly serviceable black is still obtained after subsequently chroming.

On the other hand, aniline in the form of its acetate along with only chlorate gives on steaming a yellowish brown, with the inclusion of yellow prussiate a greyish blue, and with red prussiate a greyish black. The oxalate, tartrate, and citrate of aniline each in the presence of chlorate, but in the absence of ferrocyanides, all give a black on steaming. The substitution of acetamide for the yellow prussiate does not permit the formation of the black, although the substitute is itself capable of combining with free acids. This fact shows that the influence of the cyanide salts does not effect the neutralization of the existing free acids. Consequently, in practice, the basic steam blacks with ferrocyanides are the more important.

A basic black liquor usually consists of

54 parts aniline salt.
9 parts aniline oil.
23 parts yellow prussiate.
14 parts chlorate,

the chlorate being in the proportion of 21 per cent. of the aniline. Such a mixture yields a good black after 2 1/2 minutes steaming.

Should the steaming be effected before drying, and for a whole hour, no black is obtained, simply a poor green, which remains unaltered after chroming at 140° F. If the chroming is accomplished after drying and before steaming, a black with a greyish brown tone results. By increasing the quantity of yellow prussiate the oxidation by steaming is retarded, and by reducing the quantity of chlorate it is considerably accelerated. In both cases, by treating the dried but yet unsteamed goods in a warm 1/4 to 1/2 per cent. bichromate solution no black is obtained, only a grey. If the basicity of the bottoming bath be increased by the addition of aniline the subsequent chrome bath becomes cloudy and brown. Instead of chroming warm the goods may be impregnated with a 1 per cent. bichromate solution and then steamed for about ten minutes without pressure. While the dyeing obtained with 48 parts aniline salts, 13.2 parts aniline oil, 17.5 parts yellow prussiate, and 10.5 parts chlorate supplies a black after steaming and chroming, the shade becomes correspondingly lighter and greyer when the quantities of chlorate and ferrocyanide are decreased. Similar observations are noted if the quantity of chlorate is decreased while the ferrocyanide remains constant. By steaming without previously drying a

grey green is obtained which is not altered by chroming nor again by steaming. It has been suggested by Erbele that an addition of aluminium formiate to the Aniline Black would serve as means for preserving the strength of the fibre. As the formic acid acts as a reducing agent, its influence in this respect seems to be due to the fact that a corresponding portion of the chlorate used becomes reduced by it, while the acid oxide of aluminium reacts on the salts of aniline. By the employment of a formate of chromium instead of ferrocyanide it is said fine steam blacks can be produced, although the strength of the fibre becomes at the same time appreciably deteriorated. In any case the chroming of a steam black after oxidation seems to be advantageous, as the shade is rendered redder and the color resists the influence of boiling soda, the effect of which on an unchromed steam black is evidenced by an alteration of the tone of the black to the brown side.

By carrying out the oxidation in steam, rosaninline is still formed, as is shown if a steam black treated with a soda solution is then soured or boiled in an acid bath along with a piece of white silk.

Addition of soda to the chrome bath turns the shade of the black greener, but addition of acid makes it browner

The influence of chroming, then, on oxidation blacks increases their fastness to acids, and on steam blacks increases their fastness to soda, a variation due possibly to the chemical difference between the two processes.

The double cyanides of other metals have also been experimented with, notably those of iron, chrome, manganese, and cobalt, without, however, indicating any probability of making use of them in practice, which is rendered still remoter by their high cost.

In 1800 the United States had a population of 5,308,483, and imported merchandise to the value of $17.19 per capita; in 1906 the population was 84,154,009, and the imports per capita were $14.58. The exports per capita for these two years were $13.37 and $20.41, respectively.

BLEACHING COTTON GOODS ON A SMALL SCALE.

BY HORACE KENYON.

In bleaching cotton goods on either a large or a small scale it is necessary to have a supply of good water. Bleaching in small quantities is not quite so difficult as in the larger quantities; the goods boil easier without so severe a strain on the fabric; they are handled quicker, thus ensuring a more uniform bleach with the maximum of strength retained in the goods.

A few years ago when there were lots of small bleacheries all over the world and goods were handled on a small scale, men began to use their brains to try to improve the conditions and increase the production without a corresponding increase in the cost. At present there are a great many steam laundries with their modern appliances that could handle the bleaching business with better results than was possible in the bleacheries of those early days, when we had to singe the goods one roll at a time and turn the goods through the machine with a handle, reminding one of turning the wringer on washing day.

To bleach on a small scale does not require very elaborate machinery unless it is intended to increase the production in the course of a few years. If there is any idea of this then the foundation should be laid accordingly. Larger machines should be installed and the production curtailed a little at first, rather than to put in small machines that would be inadequate for an increased production.

For a small plant to handle, say, from 15,000 to 20,000 pounds a week, the following apparatus would be required:

2 kiers to hold between 2,000 and 3,000 lbs.
2 washing machines.
1 chlorine machine.
1 acid machine.
1 small squeezer.
1 small machine for liming purposes.
2 aging pits for acid.
2 aging pits for chlorine.
Pits to hold the bleached goods.

I would advise anyone just starting in busi-

ness to have a system of double ends installed. This would entail very little more expense at first and would enable the production to be increased with less cost for power. There are other odds and ends that would be required. If it is desired to mix the chlorine from the powder, two mixers would be necessary, one for settling, the other for mixing. Lead lined tanks will be needed for sulphuric acid, also one for the hydrochloric acid if the two acids are used. This is not indispensable, but to give the goods a bath of hydrochloric acid after the lime boil is much better than to use sulphuric acid, as the former neutralizes any traces of lime that are left in the goods after they are washed.

Particular attention should be given to the setting of the kiers and the piping. High pressure kiers are more economical in regard to the use of steam. If the goods are to have colored headings or borders, low pressure kiers should be used. It is a good plan to put in both kinds of kiers and then any class of goods can be handled to the best advantage. If the goods are fringed, such as quilts, tablecloths, scarfs, towels, etc., a dash wheel should be put in and the goods given a hand bleach. This process is a little slower, perhaps, than the running system, but the amount of damage prevented by it will more than compensate for the loss of production.

For the lime bleach, from 1 1/2 to 2 pounds of lime are allowed for every 100 pounds of cloth. The goods should be thoroughly saturated and the lime properly slacked or the goods will be damaged. The cloth should be packed level and even in the kier. If low pressure, boil from 10 to 12 hours according to the quality of the goods; if high pressure, from 8 to 9 hours at 10 to 15 pounds steam pressure. This is an important part of the process and to ensure success must be well attended to or trouble will follow. Wash out the goods and treat them in an acid bath at 1 1/2 to 2° Tw. if the fabric is light; if heavy, treat them in a chlorine bath at 1 to 1 1/2° Tw. Let them age in the pits, then the light weight goods are washed back into the kier and the heavy goods are given an acid bath after the chlorine, care being taken to wash thoroughly between the baths and always before putting back into the kier for the second or white boil.

For this boil the liquor for 100 pounds of cloth is made as follows:

1 1/2 to 2 1/2 lbs. soda ash.

1 to 2 lbs. resin size.

1/2 to 1 lb. bleaching paste.

This mixture is boiled until dissolved before putting in the kier. The quantities are varied according to the quality of the goods. The chlorine and acid baths and the length of time allowed for aging in the pits are also varied.

A knowledge of the best way to handle the goods can be acquired only by experience. When entering in the ash boil the condition of the goods should be noted carefully as it varies widely at times, making it necessary to change the length of time for boiling, say from 8 to 10 hours in low pressure kiers, and from 8 to 9 hours at high pressure.

The caustic process is cheaper, but is more severe on the goods and is usually adopted for goods that are to be printed. The grey goods are saturated with the lime mixture as before, then boiled, washed out, and given an acid bath at 2° Tw., washed back into the kier and boiled in a solution made of 1 1/2 to 2 pounds of soda ash and 1/2 to 1 pound of caustic for every 100 pounds of goods. Boil for the required length of time, wash, and give a chlorine bath of 1/4° to 1/2° Tw. Let the goods lie in the aging pits until clear, then wash and give them an acid bath. Let the goods age in this for four or six hours, then wash free from acid.

I would advise any one who can do so to adopt the lime bleach.

During the year ending June 30, 1906, the exports from Chemnitz to the United States showed an increase of more than two million dollars over those of the preceding year.

According to the Bureau of Statistics the total value of the exports of American manufactures for the calendar year 1906 was $719,000,000, as compared with $571,410,497 in 1905.

INCREASING THE FASTNESS OF COLORS.

A trade product has been brought out by Sandoz, Basle, "Mordant B," which has been introduced as a means for improving the fastness and solidity of certain acid dyes to milling.

The essential constituent of this preparation appears to be prosphate of tin, and its general action one of forming insoluble lakes rendered more pronounced on contact with soap or alkalies. It is stated that even in circumstances where such lakes are not formed, marked improvements in fastness, depth, and brilliancy have been recorded.

In application the "mordant" named is added to the acid dye bath along with the coloring matter, no special precautions being required.—Rev. gen. d. Mat. Col.

CARBONIZING WITH BISULPHATE OF SODA.

The use of bisulphate of soda for carbonizing, in place of sulphuric acid or aluminium chloride, was first suggested by Spennrath. The goods to be carbonized are first impregnated with a solution of bisulphate at 10° Tw., being left in the bath for a somewhat longer period than when sulphuric acid is used. After removing excess of liquid, they are dried in a stove at a temperature of 100° C. The vegetable matter is thus disintegrated, but not blackened. This is regarded as a great advantage in the carbonizing of white or light-colored goods, which, when carbonized with acid, are liable to be discolored by the charred vegetable residues. In the carbonizing of piece goods, it sometimes happens, however, that the burrs, which are quite friable directly after the operation, regain some of their tenacity, and remain in the goods after milling and raising. By careful working this drawback can be overcome. For neutralizing, a soda solution of not more than 2° Tw. is employed.

The great advantage of carbonizing with bisulphate is said to be in the fact that the "nature" of the wool is preserved, particularly in respect of tenacity, softness, and milling properties. The process is said to be specially advantageous for loose wool.—Oest. Wollen und Leinen Industrie.

Color Cards.

Diamond Green 3G; Continental Color & Chemical Co., 128 Duane Street, New York.

A sheet giving complete dyeing directions for Diamond Green 3G and showing 2 1/2 and 3 per cent. shades on woolen yarn and piece goods.

Chlorazol, Sultan and Titan Colors; Read Holliday & Sons, 7 Platt St., New York.

This is a sample case containing a large number of samples of dyed cotton yarn and cloth, showing the results obtained with these colors. The samples are arranged in a form which is attractive and convenient for reference. Complete instructions for dyeing accompany them. This collection should be in the office of every cotton dyer.

Katigen Cutch B; Continental Color & Chemical Co., 128 Duane Street, New York.

Two samples of cotton yarn showing 7 1/2 and 15 per cent. dyeings of Katigen Cutch B, for which full working directions are given.

DYE RECIPES.

The following recipes appear in the Dyers' Supplement, which is issued each month by the TEXTILE WORLD RECORD. The Supplement contains the colored samples, dyed according to recipes given. The selection of samples is carefully made, and it is the aim to show shades which are of especial interest to the dyer, and which the requirements of the market demand. The Dyers' Supplement is a 16-page pamphlet, in convenient form for preservation. Subscription price for the Dyers' Supplement $1.00 per year.

Recipe No. 33.

Red on Cotton Yarn.

Tetrazo Chlorine Red 10 B on 100 lbs. cotton yarn. Prepare the dye bath with

3 lbs. Tetrazo Chlorine Red 10 B.
(American Dyewood Co., 154 William St., New York.)
30 lbs. Common Salt.

Enter yarn at 180° F., and dye at a boil for one hour.

Tetrazo Chlorine Red 10 B is especially noted for its level dyeing qualities, and is considered faster than the ordinary direct cotton colors.

Recipe No. 34.

Violet on Worsted Yarn.

Guinea Fast Violet 10 B on 100 lbs. worsted yarn. Prepare the dye bath with

2 lbs. Guinea Fast Violet 10 B.
(Berlin Aniline Works, 213 Water St., New York.)
4 lbs. Sulphuric Acid.
10 lbs. Glauber's Salt.

Enter at 180° F., and dye at a boil for about one hour.

Guinea Fast Violet 10 B is recommended for the production of compound shades on account of its excellent solubility and good leveling powers. It possesses good fastness to most of the color destroying agencies.

Recipe No. 35.

Violet on Cotton Yarn.

Chlorazol Violet B on 100 lbs. cotton yarn. Prepare the dye bath with

1½ ozs. Chlorazol Violet B.
(Read Holliday & Sons, 7 Platt St., New York.)
10 lbs. Glauber's Salt.

Dye with closed steam.

Chlorazol Violet B is one of the direct cotton colors, gives a fine heliotrope shade and possesses a very good fastness to washing.

Recipe No. 36.

Black on Woolen Cloth.

Amine Black 10 B on 100 lbs. woolen cloth. Prepare the dye bath with

6½ lbs. Amine Black 10 B.
(Berlin Aniline Works, 213 Water St., New York.)
10 lbs. Glauber's Salt.
3 lbs. Acetic Acid.

Enter at 140° F., raise slowly to a boil, and after boiling ¾ of an hour, add

1 lb. Sulphuric Acid

or

3 lbs. Bisulphate of Soda.

Boil ½ hour longer to exhaust the dye bath.

Amine Black 10 B yields a blue black with a greenish blue tone overhand. It possesses very good fastness to light, and good fastness to steaming, alkalies, acids and rubbing.

It will be found of interest for the piece dyeing of ladies' dress goods and suitings.

Recipe No. 37.

Brown on Worsted Yarn.

Fast Chrome Brown B C on 100 lbs. worsted yarn. Prepare the dye bath with

4 lbs. Fast Chrome Brown B C.
(A. Klipstein & Co., 122 Pearl St., New York.)
2 lbs. Formic Acid.

Enter yarn at 140° F., raise slowly to a boil, and dye at a boil for one hour. Lift yarn and add

1½ lbs. Potassium Bichromate

and boil 30 minutes longer.

Fast Chrome Brown B C possesses high coloring power and produces an excellent and even shade of brown.

Recipe No. 38.

Blue on Worsted Yarn.

Chrome Blue R on 100 lbs. worsted yarn. First, mordant the yarn in a bath made up with

3 lbs. Potassium Bichromate.
2 lbs. Oxalic Acid.

Dye at a boil for one and one-half hours. Then dye in a bath made up with

4 lbs. Chrome Blue R.
(C. Bischoff & Co., 451 Washington St., New York.)
10 lbs. Acetic Acid.

Enter at 140° F., and dye at a boil until the bath is exhausted.

Chrome Blue R will be found to possess excellent fastness to light and ordinary color destroying agencies.

Recipe No. 39.

Blue on Cotton Yarn.

Tetrazo Fast Blue B on 100 lbs. cotton yarn. Prepare the dye bath with

4 lbs. Tetrazo Fast Blue B.
(American Dyewood Co., 154 William St., New York.)
30 lbs. Common Salt.

Enter at 180° F., and dye at a boil for one hour.

Tetrazo Fast Blue B possesses excellent fastness to light.

Recipe No. 40.

Blue Black on Worsted Yarn.

Diamond Blue Black T on 100 lbs. worsted yarn. Prepare the dye bath with

4 lbs. Diamond Blue Black T.
(Continental Color and Chemical Co., 128 Duane St., New York.)
10 lbs. Glauber's Salt.
3 lbs. Acetic Acid.

Enter yarn at 180° F., bring to a boil, and dye at a boil for one-half hour. Then add

2 lbs. Sulphuric Acid

and continue the boiling until the dye bath is exhausted. Then add

1½ lbs. Potassium Bichromate

and boil ¾ of an hour longer.

Diamond Blue Black T is a level dyeing color, possessing very good fastness to light, alkalies, washing, steaming and stoving.

Recipe No. 41.

Blue on Cotton Yarn.

Katigen Indigo 4 R O on 100 lbs. cotton yarn. Prepare the dye bath with

10 lbs. Katigen Indigo 4 R O.
(Continental Color and Chemical Co., 128 Duane St., New York.)
20 lbs. Sodium Sulphide.
5 lbs. Sodium Carbonate.
25 lbs. Common Salt.

Boil up bath, and enter material at 180°-190° F., and dye for one hour at or just below a boil.

Katigen Indigo 4 R O possesses the fastness characteristic of the other sulphur colors. It dyes level and possesses a reddish tone.

Recipe No. 42.

Blue on Cotton Yarn.

Paranol Blue 2 B on 100 lbs. cotton yarn. Prepare the dye bath with

2 lbs. Paranol Blue 2 B.
(E. M. Thayer & Co., 411 Atlantic Ave., Boston.)
20 lbs. Common Salt.

Enter yarn at 180° F., and dye at a boil for one hour.

Paranol Blue 2 B is an exceedingly level dyeing color possessing good fastness.

Recipe No. 43.

Blue on Worsted Yarn.

Cloth Blue L on 100 lbs. worsted yarn. Prepare the dye bath with

4 lbs. Cloth Blue L.
(C. Bischoff & Co., 451 Washington St., New York.)
4 lbs. Sulphuric Acid.
15 lbs. Glauber's Salt.

Enter yarn at 140° F., raise to a boil and dye at a boil for one hour.

Cloth Blue L gives an excellent shade of dark blue which possesses very good fastness.

Recipe No. 44.

Violet on Cotton Yarn.

Chlorazol Violet B on 100 lbs. cotton yarn. Prepare the dye bath with

1 lb. Chlorazol Violet B.
(Read Holliday & Sons, 7 Platt St., New York.)
10 lbs. Glauber's Salt.

Dye with closed steam.

Chlorazol Violet B gives a fine heliotrope shade and possesses a very good fastness to washing.

Recipe No. 45.

Blue on Worsted Yarn.

Brilliant Naphthol Blue R on 100 lbs. worsted yarn. Prepare the dye bath with

3 lbs. Brilliant Naphthol Blue R.
(Cassella Color Co., 182 Front St., New York.)
10 lbs. Glauber's Salt.
4 lbs. Sulphuric Acid.

Enter at 160° F., and dye at a boil for one hour.

Brilliant Naphthol Blue R possesses excellent fastness to washing and alkalies, carbonizing and steaming. Its fastness to light is also good.

Recipe No. 46.

Blue Black on Worsted Yarn.

Alizarine Blue Black B on 100 lbs. worsted yarn. Prepare the dye bath with

4½ lbs. Alizarine Blue Black B.
(Cassella Color Co., 182 Front St., New York.)
10 lbs. Glauber's Salt.
10 lbs. Sodium Bisulphate,
or
5 lbs. Acetic Acid.
20 lbs. Glauber's Salt.
2 lbs. Sulphuric Acid, towards the end of the dyeing to exhaust the dye bath.

Enter yarn at 140° F., and raise to a boil in one-half hour, and dye at a boil until the bath is exhausted.

Alizarine Blue Black B possesses excellent fastness to light, alkalies and acids and produces an excellent shade of blue black.

Recipe No. 47.

Orange on Cotton Yarn.

Tetrazo Chlorine Orange R on 100 lbs. cotton yarn. Prepare the dye bath with

1½ lbs. Tetrazo Chlorine Orange R.
(American Dyewood Co., 154 William St., New York.)
25 lbs. Common Salt.

Enter the yarn at 180° F., and dye at a boil for one hour.

Tetrazo Chlorine Orange R is especially noted for its level dyeing qualities, and is considered faster to light than the ordinary direct cotton colors.

Recipe No. 48.

Blue on Worsted Yarn.

Brilliant Naphthol Blue B on 100 lbs. worsted yarn. Prepare the dye bath with

3 lbs. Brilliant Naphthol Blue B.
(Cassella Color Co., 182 Front St., New York.)
10 lbs. Glauber's Salt.
4 lbs. Sulphuric Acid.

Enter at 160° F., and dye at a boil for one hour.

Brilliant Naphthol Blue B possesses excellent fastness to washing and alkalies, carbonizing and steaming. Its fastness to light is also good.

Mill News.

Those interested in receiving early and more complete investigated information of projected new mills, enlargements, improvements, fires facts and gossip of the trade are referred to the Textile Advance News, issued weekly by the publishers of the Textile World Record, at $15.00 per year.

COTTON.

New Mills.

*Alabama, Eufala. The Chewalla Cotton Mills which have been sold, will be re-started Feb. 10, as the Barbour Cotton Mill, making shirting and print cloth. The new company is capitalized at $50,000; R. W. Moulthrop is president of the company and W. L. Wild, treasurer. Plant will have equipment of 6,000 ring spindles and 150 looms. Product will be sold through Dickson & Hull.

Canada, Montreal. The Mt. Royal Spinning Co. has been reported incorporated with capital stock of $1,500,000 to establish a plant of 1,200 looms and 40,000 spindles. W. T. Whitehead, formerly of the Dominion Textile Co., is mentioned as interested and will be general manager of the plant. Others said to have an interest are W. C. McIntyre, C. W. Treholme and J. W. Pike.

Connecticut, Meriden. Another new concern to be known as the Silver City Braid Co. has been organized with a capital stock of $50,000. Isadore Direcktor is president of the plant; Morris Mag, secretary and Nathan E. Mag, treasurer. It is expected to have the new plant running in April.

*Connecticut, Plainfield. Work is nearing compltion on the new cotton mill for the Lawton Mills Corporation. The buildings comprise a weave shed, 225 by 150 feet, one story; a storehouse, 75 by 50 feet; a picker house, 72 by 50 feet; boiler house, 50 by 50 feet, and engine room, 64 by 44 feet. The capacity of the plant is 30,000 spindles.

*Georgia, Columbus. Contract has been let for erection of the Swift Spinning Mills. The new building will be 178 by 134 feet, three stories. Work on the plant will be pushed to completion.

*Georgia, Dallas. The machinery (5,000 spindles) will soon be placed in the new mill for the Monarch Cotton Mills Company. The power plant has been installed with provision for doubling capacity later as enlargements are made.

*Georgia, Douglasville. We have been advised that details are not yet ready concerning the cotton mill at this place, but that a proposition is under consideration for using a mill building now standing, with some 80,000 square feet of floor space. An organization with capital stock of $200,000 is proposed and a plant with 7,000 ring spindles to make duck. The plan is for local people to raise $50,000, the balance to be taken by outside capitalists.

*Georgia, La Grange. Work has been about completed on the Elm City Cotton Mills and the machinery will be installed as it is received.

Massachusetts, Fall River. The Beacon Narrow Fabric Company, 134 Pocasset St., expects to start operations about March 1st. The machinery equipment has not yet been definitely decided upon. A new building is being erected. G. E. Chadwick is treasurer of the company.

*Massachusetts, Fitchburg. The Fitchburg Yarn Co. has started work on erection of their new plant, which will be 400 by 125 feet. This mill will be equipped with 50,000 spindles for making cotton yarns.

*Massachusetts, Taunton. New shafting is being installed in the Taunton River Mills and is expected that the plant will be ready for operations before long.

North Carolina, Cherryville. The Howell Manufacturing Co. has been organized with capital stock of $100,000 and will erect a 5,000-spindle mill. A. W. Howell is president of the company; A. H. Huss secretary, and J. C. Ballard treasurer.

*North Carolina, Cornelius. The new plant for the Gem Yarn Mills Company is expected to be ready for operations about June 1st. They will start with an equipment of 5,000 spindles. J. B. Cornelius is president of the company.

*North Carolina, Dallas. Operations are expected to start March 1st in the new plant for the Monarch Cotton Mills, which will have equipment of 4,100 spindles for making single hosiery yarns. M. A. Carpenter is president of this company; S A. Wilkins, vice president, and R. S. Lewis, secretary and treasurer.

*North Carolina, Kannopolis. J. C. Leslie is manager of the new mill being erected at this place by the Cannon Manufacturing Co., capitalized at $600,000. Plant will be operated on sheeting, cannon cloth and yarns.

*North Carolina, Lowell. Operations will start about March 1st by the Peerless Manufacturing Co.

*North Carolina, Lumberton. Machinery is being installed in the new plant of the plant of the Dresden Cotton Mills, which will start operations some time during March.

*North Carolina, Monroe. Charles Iceman has been elected president of the Everett Cotton Mills, recently organized; W. S. Lee, vice-president and J. L. Everett, secretary and treasurer. Arrangements will be made for a plant with capacity of 7,000 to 8,000 pounds weekly.

*North Carolina, Mooresville. Work has been started on the new plant for the Dixie Cotton Mill Co., of which E. W. Brawley is president and H. N. Howard, secretary and treasurer. Machinery, motors, etc., have all been purchased.

*Rhode Island, Alton. The Alton Manufacturing Co. will start operations April 1st in their new plant, making trimming laces. This company is capitalized at $700,000 with J. O. Curry, presi-

dent; Wm. F. Weyburn, treasurer and Chas. W. Shepard, manager. Plant is to be equipped with dye house. Product will be sold direct.

*North Carolina, Mt. Holly. The Woodlawn Manufacturing Co. expects to have the new mill in operation Feb. 15th.

*South Carolina, Rock Hill. Work is progressing on the Arragon Cotton Mills. It is expected to have the plant in operation by August 1st.

*South Carolina, Woodruff. The new mill proposed at this place by W. S. Gray & Sons will have an equipment of 10,000 spindles.

*Tennessee, Newport. Operations will start April 1st in the Bellevue Cotton Mill, C. F. Boyer, proprietor. This plant is equipped with 5,000 spindles and will manufacture single yarns on cones. Mr. Boyer does his own buying.

Enlargements and Improvements.

*Georgia, Athens. Contract has been awarded for the new machinery to be installed in the Southern Manufacturing Co.'s plant. The new building to be added will be 3 stories high and will have an equipment of about 1,300 mule, 6,100 ring and 3,800 twister spindles.

Georgia, Griffin. The Kincaid Manufacturing Co. is to erect an addition to the mill during the present year.

Maine, Brunswick. The Cabot Manufacturing Co. is installing humidifying apparatus of the Bell Pure Air & Cooling Co.

*Maine, Lewiston. The Avon Mfg. Co.'s new spinning mill has been completed and is ready to start operations.

Massachusetts, Fall River. The Granite Mills are extending their humidifying system, and have placed an order for apparatus with the Bell Pure Air & Cooling Co. of New York.

*Massachusetts, New Bedford. Contract has been awarded for erection of the new addition, 197 by 297 feet, one story and basement, for the Grinnell Mill.

*New Hampshire, Dover. The Cocheco Manufacturing Co. will rebuild the plant recently destroyed by fire. A plan has been arranged whereby the mill will be operated with a night and day force, of eight hours each, providing employment for those formerly in the plant destroyed.

*New Hampshire, Nashua. Operations have been started in the weave room (106 looms) of the new addition at the Nashua Manufacturing Co.'s plant. The carding and spinning rooms will be started next.

*North Carolina, Cherryville. Work will start in the early spring on erection of Mill No. 2 for the Gaston Mfg. Co. Plant will have equipment of 5,000 ring spindles for making 40/2 ply yarn.

*North Carolina, Greensboro. The Pomona Cotton Manufacturing Co. has begun to install 10,000 new spindles and carding equipment, in the new building, 130 by 200 feet, recently erected.

*North Carolina, Mooresville. The Mooresville Cotton Mills have started work on the erection of a new mill, No. 3, for which machinery has already been received. It is proposed to equip Mills Nos. 1 and 2 with electricity.

North Carolina, Cherryville. The Gaston Manufacturing Co. will start work shortly on erection of mill No. 2, with equipment of probably 5,000 spindles.

North Carolina, Greensboro. A new addition, 130 by 500 feet, two stories, is to be built for the Proximity Manufacturing Co. They propose installing 20,000 new spindles and 250 looms. An addition of 1,000 looms is to be made at the White Oak Cotton Mills.

*North Carolina, Monroe. The Icemorelee Cotton Mill reported to erect a new mill, has purchased the plant operated by the Crow Knitting Mill Co. and will convert same into a yarn plant. The Crow Co. will erect a new and smaller building for their occupancy.

*North Carolina, Mooresville. The Mooresville Cotton Mills expect to have their new mill building completed in August and will manufacture sheetings, ginghams, domets, etc. This company will then have a total of 2,200 mule and 27,900 ring spindles and 965 looms in all three mills.

*Pennsylvania, Wilkesbarre. The Wyoming Valley Lace Mills, which were merged with the Columbia Shadecloth Co. about a year ago, is to increase the capital stock from $2,000,000 to $2,500,000. A large part of the additional capital will be used for enlarging the plant at this place, about doubling the present capacity.

*Rhode Island, Forestdale. A new mill, to be equipped with 15,000 spindles, dye house and beaming department, will be built for the Forestdale Manufacturing Co. The building will be four stories, brick.

*Rhode Island, Warren. The Warren Mfg. Co., which has increased the capital stock to $1,200,000 expects to have their new mill completed about July, 1907, for purpose of making 40s to 100s yarns. They will install 40,272 new spindles, which will give them a total of 55,656 mule and 44,576 ring spindles, with 2,160 looms.

South Carolina, Clover. The Clover Cotton Manufacturing Co. has recently completed erection of a new steel tank, with capacity of 50,000 gallons.

*South Carolina, Lockhart. Work has been completed on the No. 2 Mill for the Lockhart Mills. This new building, 300 by 130 feet, is equipped with 25,000 spindles and 800 looms.

*South Carolina, Spartanburg. The machinery is being installed in the new addition recently completed for the Drayton Mills.

South Carolina, Yorkville. The Neely Manufacturing Company is reported as contemplating installation of 2,000 additional spindles.

*Texas, Hillsboro. The Hillsboro Cotton Mills manufacturing all widths of duck, will install 1,000 new spindles in the mill.

Mills Starting Up.

*Alabama, Alexander City. The Alexander City Cotton Mills (capital $200,000) will start operations

in March, making 6 to 8-oz. duck. This plant is equipped with 6,500 ring spindles and 164 looms. C. E. Riley is president of the company; D. A. Carrick, treasurer and A. F. Nuttall, superintendent. Product will be sold direct.

*Missouri, Kansas City. The Kansas City Cotton Mills have started operations in their new plant.

*Oklahoma, Guthrie. The Pioneer Cotton Mills have begun operations with equipment of 2,000 ring spindles. They are to install 1,500 more spindles at once. This mill makes twine and rope.

*South Carolina, Iva. Operations have been started in the new plant of the Jackson Cotton Mills.

WOOLEN.

New Mills.

*Connecticut, Central Village. Machinery is being installed in the new mill for the Central Worsted Company. It is expected that the weaving department will be started up shortly.

*Georgia, Rossville. It is expected that the plant of the Peerless Woolen Mills will soon be ready to start operations. This company is capitalized at $100,000. W. P. Wilson is president of the company; W. H. Reddick, vice president, and J. L. Hutcheson, treasurer and general manager.

*Massachusetts, North Adams. Walter A. Guile, Sr., is president of the Mayflower Worsted Company, which will start operations with 24 broad looms. A. J. Buffum is treasurer and agent.

*Massachusetts, Spencer. Operations will soon start in the Priscilla Woolen Co.'s mill, equipped with 3 sets of cards, for making shoddy. They propose making woolen goods early in the spring.

Massachusetts, Worcester. The Riverside Mills have been organized with capital stock of $50,000 and will manufacture mohair, alpaca and lustre yarns. Will start operations with equipment of 14 spinning frames, 14 additional to be installed later. S. B. Roy is president of the company; M. F. Heath, treasurer; John Foster, assistant treasurer and Wm. P. Kerr, general manager.

*New Hampshire, Nashua. The new mill (No. 7) of the Nashua Manufacturing Company's plant will have a total equipment of about 1,200 looms when completed. Part of this machinery includes some to be removed from Mill No. 6. The latter plant is being equipped with 10 sets cards and 8 mules, and will be used entirely for making woolen goods.

New Jersey, Trenton. The Columbia Carpet & Rug Co., recently incorporated with a capital of $125,000 for the manufacture of Smyrna and Axminster carpets and rugs, are located on Factory St., near Warren. They are now putting in machinery and expect to get in operation as soon as a new boiler has been placed in position.

*New York, Jamestown. The Enterprise Worsted Mills, a partnership, is operating a plant of 20 looms, located in the old towel plant formerly run by Hall, Gifford & Co. Buy the yarns.

*New York, Skaneateles Falls. The Waterbury Felt Co., recently reported incorporated to manufacture felts, has purchased the Gavin Morton Co.'s mill, which has not been running of late.

Pennsylvania, Philadelphia. The Columbia Rug Company has commenced operations with 10 looms in the old Carson Mill, Palethorp St., above Lehigh Ave. The proprietor is David M. Stroud, who formerly owned and operated the Franklinville Rug Mills in this city.

*Rhode Island, Pascoag. The Hawthorne Worsted Mill is now running with an equipment of 26 looms.

Enlargements and Improvements.

California, Marysville. Work has been started on erection of a two-story addition, 80 by 20 feet, to the Marysville Woolen Mills. Building is to be used for stock and sample rooms and garment factory. The manufacture of broadcloths has been added to the mill product.

Connecticut, Mechanicsville. The French River Textile Company has recently added two new looms in the pattern room. Two new sets of cards have also been installed. It is reported that 25 new looms are to be added later.

*Maine, Sanford. Work has been started moving the Jagger Bros.' plant to new mill at South Sanford.

Maine, Wilton. The Wilton Woolen Co. has placed order for 60 new looms to be installed in their mills. Some old looms will be taken out and be replaced with new ones.

Massachusetts, Clinton. The Earnsdale Worsted Company will install 12 new fancy looms (ordered).

Massachusetts, Franklin. The J. W. Linnehan Worsted Company proposes adding 5 new looms increasing the number of the looms at the mill to 40.

Massachusetts, Hubbardston. A new engine (purchased) will be installed in the Hygienic Blanket Mills in the spring. At that time they also propose building a new addition.

Massachusetts, Newton. Contract has been let by the Saxony Worsted Mills for an addition to the mill.

Massachusetts, Palmer. M. J. Whittall of the Palmer Carpet Mill proposes adding a two-story addition to the main mill, with other minor changes about the plant.

Massachusetts, Plymouth. It is reported that George Mabbett & Sons will remove the office building to a new addition to be erected in the spring. The space then vacated will be utilized for manufacturing purposes.

New Hampshire, Guild. The Granite State Mills, Fairbanks & Dorr, proprietors, are to build an addition, 50 by 35 feet, two stories and basement. About 20 new looms will be installed.

New Jersey, Trenton. The Princeton Worsted Mills, 129 Fair St., reports an active business. The company has a capital of $250,000 and Arthur W. Schwarz, president and John W. Nary, treasurer.

They are manufacturing men's wear worsteds, piece dyes and fancies, with equipment of 78 broad looms, also dye and finish. Sell goods through Neale & Cruikshank, 126 5th Ave., New York. They also state that they are about to put in 22 new looms, skein winding and skein dyeing machinery.

Pennsylvania, Doylestown. Wm. Lund & Son will start operations in May in the spinning department at the Clear Spring Worsted Mills, which they have leased for five years. This company now has 1,372 worsted spindles at Camden, and will operate 1,416 at this place, making shuttle bobbins from 32s down.

*Pennsylvania, Lansdowne. The shoddy mill operated by Wm. Hall & Co., recently reported destroyed by fire, will be rebuilt.

Pennsylvania, Philadelphia. The Wolstenholme & Clark Co. has placed order for two 700 new spinning mules, which give them a total of about 15,000 spindles.

Pennsylvania, Philadelphia. The Philadelphia Felt Company is moving the plant to Powder Mill Lane and Frankford Creek, where present capacity will be doubled.

*Pennsylvania, West Conshohocken. Plans have been posted for the rebuilding of the burned portion of the Merion Worsted Mills. The building will be 77.5 by 192.2 feet of stone three stories high.

Rhode Island, Oakland. The Oakland Worsted Co., which has recently installed a new boiler in the plant, has placed an order for additional looms.

Wisconsin, Menasha. The Menasha Woolen Mills are installing four 92 inch looms in the mill.

Wisconsin, Onalaska. The Onalaska Woolen Manufacturing Co. has installed an additional set of cards in the mill.

SILK.

New Mills.

*Connecticut, Meriden. Operations are expected to start about March 15th by Textile Braid Mfg. Co., recently incorporated with capital stock of $10,000, to manufacture silk braids, loops, soutache, flat, fancy and diamond braids. Will operate 150 braiders and will sell direct. H. Adlman is president of the company; P. J. Griffin, treasurer; C. H. Cheeney, secretary and L. Adlman, assistant treasurer. A new building is being erected.

New Jersey, Paterson. Thomas M. Miller, formerly with Miller & Ward, has purchased part of the Frost & Van Riper plant and is operating a commission throwing plant under name of the Miller Throwing Co.

*New Jersey, Paterson. The Modern Silk Co., recently incorporated with capital stock of $100,000, will install a plant of 2,500 spindles at start for commission silk throwing.

New York, New York. A large fireproof mill building is being erected at Bronxwood Ave. and 21st Street for the Taylor Textile Mfg. Co. Will manufacture broad silks. Office is at 41 Union Square.

New York, New York. Grossenbach & Fimple, 42 Bond St., are erecting a new mill at Jersey City Heights, N. J., where they will remove. Additional machinery will be added for making braids and millinery trimmings.

*New York, West Hoboken. The Mistletoe Silk Co., which has recently purchased the Schmidt & Meurer Silk Mfg. Co.'s plant, contemplates increasing the product. Have not fully decided whether new machinery will be installed in their present mill, or to build a new addition.

Pennsylvania, Allentown. The Queen City Silk Co. is a new concern to be organized for purpose of operating a plant to manufacture ribbons. It is proposed to have the new plant in operation by April 1st, with equipment of 100 looms. John A. McCollum, Joseph S. Mack and Leo E. Schimpf are interested in the new company.

*Washington, Seattle. The Seattle Silk Manufacturing Company has been incorporated with capital stock of $100,000. They have purchased two Crompton & Knowles looms and are in the market for warping, dyeing and throwing machinery. Will import raw silk direct from China and Japan. Arrangements are being made for purchase of a good site in Columbia City, not far from this city. Henry A. Bammert is treasurer of the company and Moncrieffe Cameron, 304 American Bank Bldg., Seattle, secretary, to whom all communications should be addressed.

Enlargements and Improvements.

*Connecticut, Norwich. The J. B. Martin Co. is erecting the new brick addition, 140 by 111 feet, one story, reported to be built. This building will have the "saw tooth" roof, with glass sides. The equipment of their plant will be increased about 50 looms, with individual motors.

*New Jersey, Paterson. The Post & Sheldon Corporation will start their new plant at this place Feb. 1st, making dress silks. This mill will be equipped with 100 looms. Company also operates mills at Slatington, Pa., and Dover, Del.

New Jersey, Paterson. The Passaic Falls Silk Co., commissiont throwsters, will move their plant to the Granite Mill, where capacity will be greatly enlarged.

New Jersey, Paterson. It is reported that the present capacity of the Commercial American Silk Mfg. Co.'s plant is to be doubled. They are to remove to the recently completed Sowerbut Mill and will make a high grade of plain dress goods.

New Jersey, Paterson. The Union Ribbon Co. has purchased most of the Maynard Silk Co.'s machinery and has combined the two plants.

New Jersey, Paterson. The Brilliant Silk Co. has leased part of the plant at Market and Spruce Streets and will install 200 broad silk looms and other machinery for manufacturing fancy dress and tie silks.

*New Jersey, Paterson. The Brilliant Silk Mfg.

Co., successors to the Brilliant Silk Co., are adding new machinery and will have a total of 350 looms when completed (about a month). This concern, of which J. B. Whitney is president and treasurer and Wm. E. Eaton, superintendent, manufactures broad silks.

*New Jersey, Paterson. The Luvan Silk Co., reported to enlarge the plant, will install 18 new box looms, 45 inches, giving plant a total of 60. This concern is capitalized at $50,000, with Herbert Lubelski, president; John R. Van Blascom, treasurer; Milton Lubelski, vice-president and S. M. Van Blascom, secretary.

New Jersey, Paterson. Chas. E. Miller, 112 Straight St., has purchased the Ackerman & Barton Mill, Railway Ave. and Thomas St., and will remove to same. Additional ribbon looms will be installed.

New Jersey, Paterson. A. J. Van Riper is reported to install additional looms in the mill, manufacturing high grade dress and tie silks.

New Jersey, Paterson. A number of Crompton & Knowles box looms are being installed in the Aronsohn-Bloom Silk Co.'s mill.

New Jersey, Paterson. Geo. W. Kuenneth has removed his plant from 17 Madison Ave. to larger quarters in C. Mazuy's mill, 112 Straight St.

New Jersey, Paterson. It is reported that the Maple Silk Mfg. Co. has secured a site and will erect a new mill.

New Jersey, Paterson. The Holzman Silk Mfg. Co. have rented additional space in the Congdon Mill and will install a number of new ribbon looms and auxiliary machinery.

MISCELLANEOUS.

*Massachusetts, North Adams. Operations have begun in the Windsor Print Works, which have been closed for some time. The temporary officers of the new company are Walton Ferguson, president; Charles M. Howard, vice president, and Alfred L. Ferguson, treasurer. The New York offices of the firm are located at 65 Worth St. It is thought that the plant will be running to its full capacity within a short time.

Massachusetts, Lawrence. The Farwell Bleachery is installing new machinery in the addition recently built.

*North Carolina, Granite Falls. O. A. Robbins (Charlotte, N. C.), is president of the Granite Cordage Company recently organized for purpose of manufacturing cordage. A. A. Shuford (Hickory) is treasurer of the company and J. M. Allred, manager. About 50 machines will be installed at first.

*Pennsylvania, Philadelphia. Plans have been prepared for a new building at Front and Somerset Sts. for the Angola Dyeing Co. The new building which will be 2 stories, with 2 story power house, is expected to be completed about April 1st. The entire plant of the company will be located here.

Pennsylvania, Philadelphia. The Industrial Dyeing & Finishing Works, 3829 Frankford Ave., have installed new equipment which doubles their capacity on wide and narrow fancy worsted dress goods and men's wear. The entire department will be under the charge of Harry Webster, formerly of Webster & Sullivan, Valkone Dye Works, Philadelphia. These enlargements were made necessary by the increased volume of business.

Pennsylvania, Reading. The Reading Dyeing Co. is a new company to be incorporated with capital stock of $25,000 and will equip a new plant. Max Thus, formerly with the Prospect Dye Works and Charles Stehle and Wm. H. Brehm of Philadelphia are mentioned as interested.

FAILURES AND SUSPENSIONS.

*Maryland, Baltimore. William Blau and Myer Rosenbush have been appointed receivers of the Calvert Cloth Company, recently petitioned into bankruptcy.

New Jersey, Paterson. The M. P. Reinhart Co., which has been operating 100 looms in the Eastwood Mill, has made an assignment for the benefit of the creditors, who are mostly raw silk dealers of New York.

Pennsylvania, Allentown. The Liberty Silk Dyeing Co.'s plant has been put in hands of the sheriff and the personal property will be offered for sale.

Pennsylvania, Philadelphia. The James Dunlap Carpet Co., whose main mill is located at 56th and Jefferson Sts., West Philadelphia, and who recently bought the Bromley Worsted Co.'s mill and equipment at Indiana Ave. and A St., are in financial difficulties. At this time a statement of the company's affairs cannot be given.

Rhode Island, Pawtucket. The New England Thread Company has filed a voluntary petition in bankruptcy. James F. Phetteplace of Pawtucket has been appointed receiver.

Utah, Ogden City. A petition has been filed asking that a receiver be appointed for the Ogden Knitting Company.

FIRES.

New Hampshire, Dover. No. 1 mill of the Cocheco Manufacturing Co.'s plant has been destroyed by fire. The loss, estimated at $500,000, is fully covered by insurance.

New Jersey, Jamesburg. Westerhoff Bros. & Napier Co.'s plant has been entirely destroyed by fire. The rebuilding of the plant will not be considered until the insurance has been adjusted.

New York, Little Falls. The Lovenheim Building, in which the C. W. Becker Shoddy Mill was located, has been destroyed by fire. The loss on the Becker plant has been estimated at $25,000; insurance of $20,000.

New York, Troy. The large building owned by the Troy Waste Mfg. Co. and used as office and storehouse, has been destroyed by fire. The loss is estimated at $300,000.

Ohio, Zanesville. Kapner Bros. & Duga Hosiery Co.'s mill has been destroyed by fire. The loss is estimated at $15,000.

Pennsylvania, Philadelphia. The J. Spencer Turner Co.'s plant has been damaged to the extent of about $3,000 by fire which occurred in the Empire Mill, Huntingdon St. and Kensington Ave. The Achuff Knitting Mill, Philadelphia Yarn Company, J. & E. Faawson and Lehigh Mfg. Co. are also located in the building.

FACTS AND GOSSIP.

*Alabama, Eufaula. The Chewalla Cotton Mills have been purchased at public sale by a syndicate of which E. M. Lovelace is president and Lawrence Wild, secretary and treasurer. It is the purpose of the new owners to put the plant in good running order and resume operations as soon as possible after the sale has been confirmed.

Alabama, Montgomery. The Alabama Cordage Company has been reorganized as the Cordage Company with capital stock of $50,000. A. J. Kaufman is president; F. F. Johnston, vice-president, and T. J. Reynolds, secretary and treasurer.

Alabama, Oxford. It is reported that the Hoffman-Corr Manufacturing Company, of Philadelphia, has purchased the Blue Springs Cotton Mills. A new company to be known as the Planters' Manufacturing Co., with Wm. V. Bailey, president, is to be formed to operate the plant and manufacture yarns and cordage.

Connecticut, Danielson. The Davis & Brown Woolen Co., with mills at this place and Worcester, Mass., has been incorporated with capital stock of $15,000. Henry J. Brown is president of the company and A. Otis Davis, treasurer.

Illinois, Lacon. The Lacon Woolen Mills, operating plant at this place, have been incorporated with capital stock of $25,000.

*Illinois, Waukegan. We have been advised by Dr. J. F. Roemer, secretary of the Waukegan Commercial Association, that they are interesting capital to the extent of $100,000 for the lace curtain mill proposed at this place, but have not yet organized.

*Illinois, Zion City. It is reported that the Zion Lace Industries, John C. Hately, receiver, are to be offered for sale during March.

Indiana, Mishawaka. The Mishawaka Textile Company has been reported incorporated with capital stock of $50,000. W. T. Davies and J. E. White are mentioned as among the incorporators.

*Louisiana, New Orleans. The Textile Mills Corporation has been organized with an authorized capital of $5,000,000 and combines the Lane-Maginnis Mills Corporation and the Mississippi Mills (the latter at Wesson, Miss). S. Odenheimer is president of the new corporation, Maurice Stern and W. T. Maginnis, vice-presidents and Geo. A. Hero, treasurer and Harry T. Howard, secretary.

Maine, Dexter. The Abbott & Latimer Co. has been incorporated with capital stock of $25,000. R. A. Latimer is president of the company and A. P. Abbott, treasurer.

*Maine, Richmond. Parties identified with the De Cort Yarn Company of Boston have bought the property of the Richmond Cotton Mill and will put it in operation as soon as possible.

*Massachusetts, Boston. The Boston Waste Co. capitalized at $30,000, makes machined wiping waste and operates plant by electricity. Wm. J. Hayes is president and superintendent of the company and Chas. H. Hayes, treasurer and buyer.

Massachusetts, Gloucester. The Gloucester Net & Twine Co., capitalized at $125,000, is now in control of the Linen Thread Company.

*Massachusetts, Hinsdale. There have been a number of rumors about the Hinsdale Woolen Co. starting up in the near future, but we understand that the company does not expect to resume operations at present. It has not yet been sold, although there have been some negotiations for the plant.

*Massachusetts, Medway. It is reported that parties are negotiating for the purchase of the Medway Woolen Co.'s plant. It is expected to have the mill running by April 1st.

Massachusetts, North Adams. The North Adams Rug Co., 95 1/2 Main St., is operating a plant of 6 looms, making rugs. Electricity is used. Product is sold direct.

Massachusetts, Webster. The Perry Yarn Mills have been incorporated with capital stock of $100,000. H. E. Smith, president and treasurer. This is an incorporation of plant in operation.

Michigan, Detroit. It is reported that the Hamilton Carhartt Company contemplates erecting a mill for manufacturing the cloths used in making overalls.

Minnesota, Fosston. The Fosston Woolen Mills are now owned by F. A. Patrick & Co. The mill will be continued with greater facilities.

Minnesota, Minneapolis. The American Kersey Company, Sherlock M. Merrill, president, is reported to erect a new mill at this place, for manufacturing medium and low priced woolens.

New Jersey, Midland Park. It is reported that the Norfolk Silk Co., of Norfolk, Va., has purchased the plant of the Holt Bros. Silk Co., which has been idle for some time, and will operate same as a branch mill.

New Jersey, Newark. The Essex Embroidery Works (office, 375 Fifteenth Ave.), have been incorporated with capital stock of $20,000 by Ernest Bellingrath, William Hagmann and Herman Baumert.

New Jersey, Passaic. The Passaic Cotton Mills have been incorporated with capital stock of $100,000. Among the incorporators are Robert D. Benson, Henry Binns and John D. Suffern.

New Jersey, Paterson. The Eureka Silk Dyeing Co. has been incorporated with capital stock of $50,000. A. Coirrin, J. Walton and J. D. Birchenough are mentioned as interested.

New Jersey, Union Hill. The Textile American

Embroidery Co. has been incorporated with capital stock of $10,000 to manufacture embroideries. Louis A. Hildegrade and Louis Karrier (Passaic, N. J.), are interested.

New York, Cohoes. Albert Musgrave has purchased the dyeing plant of Duncan & Baillie and will continue operating same.

New York, New York. The Gutta Percha & Rubber Mfg. Co., 126 & 128 Duane St., proposes equipping their plant for manufacture of heavy cotton duck, sheeting and drilling, of which they use considerable. A number of looms have been ordered and as soon as working satisfactorily will install more.

New York, Poughkeepsie. The Ideal Linen Mesh Co. has been incorporated with capital stock of $20,000 to manufacture linen and cotton mesh cloth and underwear. William A. Lawrence and Wm. I. Caven are interested. This is probably an incorporation of the firm of Lawrence & Caven, who have been operating a plant here.

New York, Oriskany. At the annual meeting of the H. Waterbury & Sons Company, J. E. Waterbury, Sr., was elected president; W. F. Waterbury, vice-president; and M. H. Waterbury, secretary and treasurer.

New York, Seneca Falls. The Gleason Knitting Mills are being offered for sale to close an estate. Property covers 65,000 feet floor space. The main buildings are three stories high.

*New York, Schagticoke. The receivers of the Schaghticoke Woolen Mill have been authorized to continue operating the mill.

New York, Utica. The Frankfort Textile Company has been incorporated for purpose of manufacturing cotton and woolen yarns. W. W. Lowery, William F. Harris and Beecher M. Crouse of the Avalon Knitwear Company are mentioned as interested.

New York, Waterford. The Ormsby-Morris Company has been reported incorporated with capital stock of $10,000 to manufacture textiles.

*North Carolina, Bessemer City. At meeting of the creditors of the Southern Cotton Mills, resolutions have been passed appointing a committee to make detailed inquiry into condition of the business of the mills and formulate a reorganization plan, report to be presented at a later meeting.

North Carolina, Charlotte. The D. A. Tompkins Co. is to divide its interests. The machinery business machine shops and patent shops will be taken over by a new company to be formed. J. W. Conway, the Southern agent of the General Fire Extinguisher Co., will be the president of this new company, but will not relinquish the management of his other business. The D. A. Tompkins Co. will continue to carry on its engineering business and also act as a holding company for its cotton manufacturing interests as well as its large interest in the new machine company. This latter concern has a capital stock of $250,000 and changes and extensions will be made in the plant so that the different branches will be consolidated.

North Carolina, Lenoir. The Whitnell Manufacturing Co. has been reported incorporated with capital stock of $100,000. A plant of 6,000 spindles is proposed. J. L. Nelson is mentioned as interested.

North Carolina, Milledgeville. The Milledgeville Manufacturing Co., capitalized at $100,000, has taken over the plant of the Eldorado Falls Cotton Mills. Plant is equipped with 8,000 spindles for making yarns, twines and cordage.

North Carolina, Shelby. A. C. Miller has sold his interest in the Belmont Cotton Mill to J. J. McMurry & Sons. The mill is to be enlarged and operated with increased facilities.

*North Carolina, Wadesboro. We have been advised by the Wadesboro Cotton Mill Co. that the report concerning increasing the plant is premature.

Ohio, Fredericksburg. The Fredericksburg Woolen Mill is now owned by A. T. Slutz & Sons, who have purchased the plant. Will manufacture bed blankets, starting operations March 1st, with one set cards and 9 looms.

*Pennsylvania, Chester. It is reported that the Fearless Textile Company, Wallingford, which has purchased the Grove Mills at this place, proposes building a weaving mill for making fancy worsteds. They will install 60 broad looms.

Pennsylvania, Philadelphia. A notice has been sent out to the effect that William Milnes, by mutual agreement, has retired from the partnership of Stead, Miller & Co. Mr. Milnes' interest has been purchased by his copartners who will continue the business as heretofore and under the old name, with Wesley Stead, Theodore F. Miller and Theodore M. Hillsley as members of the firm. The mill is located at 4th and Cambria Sts., where they are manufacturing draperies and upholstery goods on 190 looms which they sell direct.

Pennsylvania, Philadelphia. A charter has been applied for John F. Lodge & Sons, Inc. This concern operates the Pequod Mills at Hart, Lane and Emerald Sts., where they are manufacturing cotton and woolen carpet yarns on 27 sets and 4,900 spindles. The incorporators are: John F. Lodge, J. Friend Lodge and George W. Lodge, all of whom are now connected with the present concern of John F. Lodge & Sons.

Pennsylvania, Philadelphia. Messrs. Upham Bros. & Co., the well known manufacturers of sewing threads at 241 to 245 Arch St., have recently acquired possession of the coning plant of A. R. Matthews located at 812 Winter St., and are now removing the machinery to their present address where they state they are now in a position to handle any and all orders for coning and tubing.

Pennsylvania, Philadelphia. At a recent auction of the S. B. Ferguson plant, the major portion of the machinery was purchased by James Taylor, Philadelphia, dealer in knitting mill machinery, who will dispose of it in lots to suit buyers.

Texas, Celeste. The Perrin Cotton Mills have been purchased by Britton Bros., of Chicago, and Dallas. The mills are to be put in operation and it is thought that the capacity of the plant will be doubled.

Personals.

Henry Doomus has accepted the position as overseer of spinning at the Fall River Iron Works Mill, Fall River, Mass.

P. S. Plouff, who has been designer at Bleakie's Mill, Sabattus, Me., has accepted a position at Rockville, Conn. It is understood that Mr. Plouff will have charge of the new mill recently built in that city.

Wm. Smith has resigned his position at the Schuster Woolen Company, East Douglas, Mass., and returned to his home in Webster.

Wm. E. Towsley, overseer of weaving at the Lancaster Mills, Clinton, Mass., has severed his connection with that firm and is succeeded by John E. Hume, who has been overseer at the No. 2 Mill of this company. Mr. Hume is to be succeeded by Jos. Bradsley and Daniel Grady, who have been assistants under him.

H. G. Moore, who has been employed at the Mississippi Cotton & Woolen Mills for a number of years, will assume the superintendency of the Magnolia Cotton Mills, a position tendered him recently. W. L. Ross, foreman of the woolen department of the Mississippi Cotton & Woolen Mills for several years, has resigned to engage in the manufacturing of lumber.

Wm. Carter, president of the Wm. Carter Company, Highlandville, Mass., celebrated the fiftieth anniversary of his business start in America, January 28th. Mr. Carter worked the first foot power knitting machine brought from New England. He now has two large buildings in Highlandville, which has become a knit goods centre. Mr. Carter is 77 years of age, but still remains active in business and social life.

W. E. Cobbett has resigned his position as overseer of carding for The Jos. Noone's Sons Company, Peterboro, N. H.

Jos. Bouley has accepted the position as overseer of carding for the Stanley Woolen Company, Uxbridge, Mass. He was formerly engaged at Wilton and later at Collinsville, Mass.

Thomas A. Tunney has accepted the position of overseer of carding for The Jos. Noone's Sons Company, Peterboro, N. H. He was formerly engaged at Springfield, Ill.

Geo. R. McDougall, formerly overseer of carding at the Hudson River Woolen Mills, Newburgh, N. Y., has been appointed superintendent of the Pluckamin Mill at Pluckamin, N. J., operated by the Somerville Mfg. Company, Somerville, N. J.

Chas. B. Cook has been appointed president of the Algonquin Printing Company, Fall River, Mass., to succeed Robert T. Davis.

Frank Plunkett, who has been employed at the Gay Bros., Cavendish, Vt., as overseer of carding, has accepted a position at the Beaver Brook Mills, Collinsville, Mass.

John H. Ryan, overseer of the No. 2 Mill of the Charles River Woolen Company, North Bellingham, Mass., has resigned and is succeeded by Daniel Doe.

John McMahon and Thomas Sutcliffe, two section hands at the Arlington Mills, Lawrence, Mass., have severed their connection with that company and engaged with the Wood Mills of that city.

S. A. Lewis, overseer of weaving at the Holbrook Mills, Millbury, Mass., has resigned and accepted a position at Fall River, Mass.

J. Sorrells has been transferred from the Gainesville Mill to the New Holland Mills, Ga., as overseer of carding, succeeeding D. Schofield.

Jos. Wood, overseer of spinning at the Tingue Mfg. Company, Seymour, Conn., has resigned and accepted a position at Utica, N. Y.

James H. Fraser, overseer of weaving for the Terry Mfg. Company, Waterville, Me., has resigned and accepted a position at North Adams, Mass.

Stephen Edwards, formerly boss carder at the Waterbury Mills, Oriskany, N. Y., has again reentered their employ as overseer of carding.

Michael H. Hurl has accepted a position as second hand of the mule spinning for the China Mfg. Company of Suncook, N. H. He was formerly employed at Fall River, Mass.

Geo. Waterhouse, who has been employed a number of years at the Clinton Woolen Mills, has accepted a position as overseer of weaving at Reedsburg, Wis.

J. E. Brinker of Mankato, Minn., has accepted a position at the Appleton Woolen Company of Reedsburg, Wis., as overseer of carding.

Edward Reynolds has accepted a position as overseer of finishing at the Martinsburg Woolen Mills, Martinsburg, W. Va.

O. Mayrand has taken a position as overseer of fulling at the Germania Mills, Holyoke, Mass.

D. L. Arnold, of Holyoke, Mass., has been engaged to take charge of the weaving for the American Felt Company, Glennville, Conn.

John W. Crowther, the new superintendent for the Wakefield Mills, Wakefield, R. I., has begun his work at the mill and is stopping with his family at the Robinson House.

Thomas H. Igo, overseer of spinning for the Assawauga Co., Dayville, Conn., has resigned and been succeeded by Chas. H. Ashworth, formerly of the Stanley Woolen Co., Uxbridge, Mass. Mr. Igo was presented by the help in his employ with a handsome fob chain, a three-opal ring and an umbrella. The management and also the help in the spinning department were sorry to lose such a valuable man.

R. H. Rice has accepted position as manager of the Urbana Woolen Mills, Urbana, Ohio.

Frank Pryor has resigned his position at the

Arctic Mills, Centerville, R. I. and has accepted one at Riverpoint, R. I.

Albert Bowers has accepted a position as second-hand in the spinning room at the Assawaga Co. Mills, Dayville, Conn., succeeding Daniel Malone, resigned.

James A. Young, bookkeeper and paymaster at the Linwood Mills, Whitingville has resigned to accept a position in the office of the Whitin Machine Works, Whitingville, Mass.

George Chapman, overseer of spinning at the Edwards Mfg. Co., Augusta, Me., has resigned his position.

J. C. Heflin has been appointed superintendent of the Windsor Mills of the Hygienic Fibre Co., Greenville, R. I.

Chas. A. Byington who has had charge of the Regal Textile Co. Mill at Syracuse, N. Y., has accepted a position to take charge at the Kendall Knitting Co., Utica, N. Y. He succeeds W. A. Clark, who has been appointed Superintendent of the Ontario Knitting Co., Oswego, N. Y.

John Weeks has accepted the position of overseer of carding at the Beaver Brooks Mills, Collinsville, Mass.; was formerly employed for C. B. Alling, Derby, Conn.

Joseph Carter, overseer of finishing at the Pioneer Woolen Mills, has resigned and been succeeded by Mr. Hall.

H. T. Waterbury, treasurer of the H. Waterbury & Sons Co. Woolen Mill at Oriskany, N. Y., has resigned to accept a position as superintendent at Skaneateles Falls, N. Y.

Michael Coyle, overseer of bleaching has accepted position with Joseph Bancroft & Co., Wilmington, Del.

Ake Hugo has accepted position as designer at the Fred Sayles Mills, Pascoag, R. I. He succeeded H. L. Gamage, who resigned.

Fred A. Place, overseer of spinning at W. E. Hayward Mills at East Douglas. Mass., has resigned, and accepted a position at the Pine Tree Woolen Mills, Putnam, Conn.

Philip L. Hebert has accepted position as machinist for the Charles River Woolen Co., N. Bellingham, Mass. Was formerly employed at Lafayette, R. I.

Frank Eastwood, formerly superintendent at Hockanum Mills, has been transferred to the New England Mills as Supt.; Chas. S. Bottomley, who has been superintendent of the New England Mills, has been referred to the Hockanum Mills as superintendent.

Frank Peck has accepted the position of overseer of carding at the Pawcatuck Woolen Co., Potter Hill, R. I. Was formerly employed at Amherst, N. S.

John Scaife has been engaged as overseer of carding and spinning for the Lewisburg Woolen Co., Lewisburg, Pa.

Thos. Smith has accepted a position at the Cotton Mill at Danville, Va. Was formerly employed at Leaksville Cotton Spray, N. C.

John Keefe, overseer at the Clinton Woolen Mfg. Co. at Clinton, Mich., has resigned to accept a position of overseer of dyeing at the Seneca Falls Woolen Mills, Seneca Falls, N. Y.

David Vanesse has accepted the position as boss weaver with the Warren Woolen Co., Stafford Springs, Conn.

Daniel Paro, Jr., has resigned his position as overseer of weaving at Adams Woolen Co. Mill at Maples Grove, and is succeeded by J. H. Fraser of Lowell. Mr. Paro has accepted the position with the Maple Grove Worsted Co. of North Adams, Mass.

T. O. Malley has accepted the position as overseer of carding and spinning at the Renfrew Mfg. Co. at Adams, Mass. Was formerly employed at Hebronville, Mass. He succeeded Philip Sine who has removed to North Adams.

James S. McKay, overseer of the weaving department in No. 5 and 7 Mills of the Hamilton Corp., Amesbury, Mass., has resigned. He goes to Salmon Falls Mfg. Co., Salmon Falls, N. H.

Charles W. Everett, who has been employed as second hand in the weaving department of the Assabett Mills, Maynard, Mass., has resigned to accept a position as overseer of weaving with the Massasoit Mills, Huntington, Mass.

James Bolderson of Clyde, formerly employed as overseer of the color room at the Apponaug Print Works, has again entered the employ of this company.

H. E. Sykes, formerly superintendent of the Schaghticoke Mills Co., Schaghticoke, N. Y., has accepted the position as superintendent at the Beebe-Webber Co., Holyoke, Mass.

James Sutcliffe, formerly connected with the American Thread Co., Fall River, Mass., is now located at Auckland, New Zealand, where he will make his home with relatives.

Herbert Walmsley, son of H. E. Walmsley, agent of the Wamsutta Mills, New Bedford, Mass., and former president of the National Association of Cotton Manufacturers, has for some time been enrolled for the complete course of cotton manufacturing with the International Correspondence Schools, Textile Department, New Bedford, Mass., and although only seventeen years of age has made an unusually high record. Mr. Walmsley selected this method for his son to obtain a textile education and is highly pleased with the results and with the textbooks and instruction papers. He intends shortly to enroll his son for an electrical course with the International Correspondence School to equip further for the mill business, in which he is engaged at the Wamsutta Mills.

W. W. Crosby, formerly the principal of the Lowell Textile School, has recently become associated with the organization of F. W. Dean, mill engineer and architect, Boston.

Sydney Hopkins, formerly superintendent of the Oneita Yarn Mills of Utica, N. Y., has accepted a position of overseer of spinning for the Mohawk Valley Cap Factory, New York.

Henry Welty has accepted the position of over-

seer of carding at the Mohawk Valley Cap Factory, Utica, N. Y. He was formerly employed at the Utica Yarn Mills.

S. Y. McDonald has accepted the position of overseer of weaving for the Muskigun Valley Woolen Mfg. Co., Dresden, Ohio.

J. T. Carter, formerly overseer of carding at the Golden Belt Mill, Durham, N. C., is now superintendent of the Wilson Cotton Mills, Wilson, N. C.

Fred Hall, formerly overseer of spinning for the Aldrich Cotton Mills, Moosup, Conn., has resigned, and accepted a similar position at Dover, N. H. He was presented by the help in his department with a chain and Masonic charm.

W. H. Burwood who has been overseer of spinning in the Madison Woolen Company's mill, Madison, Me., has resigned his position and accepted a similar one at Scranton, Pa. He was presented by the help in the spinning department with a handsome gold watch charm. He is succeeded by Albert Foster, formerly engaged at the Indian Spring Mills, Madison, Me., but more recently with C. B. Alling & Co., Derby, Conn.

John Bernhardt, has accepted the position as superintendent of the Fichter & Martin Silk Mills at Bethlehem, Pa., succeeding Thomas H. Kinney, resigned.

Edward Carpenter, formerly superintendent for the F. S. Mackenzie Woolen Mills, Bridgewater, Vt., died at Hartford, Conn., Feb. 10th. He was born in Webster, Mass., Feb. 28th, 1844. His father was a woolen manufacturer and his son followed his footsteps. Mr. Carpenter was well known in the woolen business throughout the country. For the past twenty years until recently he lived at Bridgewater, Vt., where he was immediately connected with the Congregational Church, also superintendent of the Sunday School.

Charles S. Bottomley, has been appointed superintendent of the Hockanum Co., Rockville, Conn. He comes from the New England Co., where he has been superintendent for the past seven years.

Edward J. Fieldes has accepted the position of overseer of weaving for the Haile & Frost Mfg. Co., Hinsdale, N. H.

Thomas H. Spurr, of West Buxton, Me., has taken the position of overseer of dyeing with the Angus Park Mfg. Co., East Glastonbury, Conn.

F. L. Leavitt, formerly overseer of dressing at the Boston Manufacturing Co., is now engaged at Anderson, S. C., setting up spinning machines for a new company.

H. G. McFalls, formerly with the Harden Mills at Worth, N. C., is now superintendent of the Levi Mills at Rutherferdton, N. C.

E. E. Stanley has been appointed superintendent of the Park Cotton Mills, La Grange, Ga.

John Lewis has accepted the position of superintendent of the Morehead Cotton Mills, Spray, N. C., succeeding W. D. Neal, resigned.

Paul D. Smithson, superintendent of the Saratoga Victory Mfg. Co., Victory Mills, N. Y., has resigned and accepted a similar position at Fall River, Mass.

William Mowat has accepted a position as overseer of carding at No. 1 mill of the Bibb Mfg. Co., Macon, Ga. He was formerly employed at Saco, Me.

Thomas Sykes, superintendent at North Adams Mfg. Co., North Adams, Mass., has accepted the position as general superintendent of the Minterburn Mills Co., at Rockville, Conn.

W. T. Howard has accepted a position as boss mule spinner at the Willimantic Cotton Mills Corporation, Willimantic, Conn.

W. H. Willis has been promoted to the position as general manager of the Aberfoyle Mfg. Co. mill at Manayunk, Pa.

Thomas Phelan has resigned his position as overseer of finishing for F. Scott & Son, Saugus, Mass.

John Pickford, who has been overseer of weaving for a number of years for the Belle Vue Mills, Clinton, Mass., has resigned and will accept a position with the Pickford Bros. at their new mill in that town.

William Waynes, overseer of dyeing at North Dexter Woolen Mills, North Dexter, Me., has accepted a position in the dye house at Pioneer Woolen Mills, Pittsfield, Mass.

Samuel Foss has accepted a position as overseer of beaming at the Everett Mills, Lawrence, Mass., succeeding Graham Seddon.

The marriage is announced of Mr. Harry Stephenson of the firm of Speed & Stephenson, textile machinery importers and dealers of Boston, to Miss Hattie V. Thynne, on February 11th. They will make their home at the Longfellow, Boston.

J. R. Haney, formerly overseer of carding, has accepted the position as superintendent of the Young, Hartsell Mill, Concord, N. C., succeeding O. L. Wagstaff, resigned.

Thomas J. Sweat has accepted a position as overseer of finishing with the Hamburger Cotton Mills, Columbus, Ga. He was formerly employed at the Barber Cotton Mills, Mobile, Ala.

Charles S. Smart has accepted a position as superintendent of the Shelby Cotton Mills, Shelby, N. C. He was formerly employed at East Durham, N. C.

C. D. Bell, formerly of Henrietta, N. C., is now overseer of the cloth room at the Saxon Mills, Spartansburg, S. C.

H. S. Houghton, Jr., has accepted the position as superintendent of the Anchor Webbing Co., Woonsocket, R. I. He recently resigned the position as superintendent of the cotton mill in Montreal, Canada. He is a brother of E. W. Houghton, superintendent of the Globe Mill.

J. C. Leadbetter, superintendent of the Fuller Bag & Cotton Co., Atlanta, Ga., has resigned. He had charge of the bleaching department.

Benjamin A. Anderson, who has been connected

with Firth & Foster Co., Philadelphia, for the past 18 years, has resigned and accepted an engagement with the Nicetown Dye Works.

J. A. McLaughlin has accepted the position as superintendent of the new Burgess Mill at Pawtucket, R. I. He was formerly engaged as overseer at the Hadley Thread Mills, Hadley Falls, Mass.

George Sheldon has accepted the position as overseer of weaving at the Enfield Mfg. Co., Enfield, Mass. He was formerly employed at the Swift River Co., Smiths, Mass.

A. McWilliams has accepted a position as overseer of carding at the Atlas Linen Co., Meredith, N. H. He was formerly employed at Worcester.

George F. Maguire, formerly overseer of carding at the Berkeley Mills, Wales, Mass., has accepted a position as overseer of carding at the Lawrence, Webster Co., Malone, N. Y.

Harry Locust, formerly secondhand in the spinning room at the Wilton Woolen Mills, Wilton, N. H., has accepted a position as overseer of spinning with Charles J. Amidon & Son, Hinsdale, N. H., succeeding Joseph J. Heap, resigned.

F. K. Treadway has engaged as boss carder with the Wallace & Smith Blanket Mills, La Porte, Ind.

It is reported that James H. Barnett has accepted a position as superintendent with the Talcott Bros., Talcottville, Conn. He was formerly employed at Darling Woolen Mills, Holliston, Mass.

Joseph Shaughnessy has accepted a position as overseer of finishing with C. A. Root & Co., Uxbridge, Mass. He was formerly employed at the Standish Mills at Plymouth, Mass.

H. L. Gammage has accepted a position as designer for the Beebe, Webber Co., Holyoke, Mass. He was formerly employed at the Nanquet Worsted Mills, Bristol, R. I., but more recently with Fred L. Sayles Co., Pascoag, R. I.

T. J. Sheehan, formerly employed as overseer of carding at Madison Woolen Mills, Madison, Me., has accepted a position as overseer of carding with the Oregon City Mfg. Co., Oregon City, Oregon.

E. C. Carr, overseer of finishing for the Granite Woolen Co., West Swanzey, N. H., has resigned, and has been succeeded by James Fagan of Old Town, Me.

W. Frank Van Kuren has accepted a position as overseer of spinning at Clayville, N. Y.

Charles G. Tait has accepted a position as superintendent and designer for Robert H. Shaen, Indiana Ave and A St., Philadelphia, Pa. He was formerly employed at the Riverside Mills; previous to that he was at the Waverly Mills, Pittsfield, Me.

Thomas J. Connelly, overseer of finishing at the Wakefield Mfg. Co., Wakefield, R. I., has tendered his resignation to accept a position as overseer of finishing with the Middlesex Co., Lowell, Mass.

James Ryan, overseer of spinning at Nos. 2 and 5 mills of the Cocheco Mfg. Co., Dover, N. H., has resigned.

J. H. M. Beattie has accepted the management of the Olympia & Granby Cotton Mills of Columbia, S. C.

J. Sumter Moore is to have charge of the Richland & Capital City Mills of Columbia, S. C.

Maurice A. Snow has accepted a position as overseer of weaving at the American Felt Co. mill, Glenville, Conn. He was formerly employed at the Hillsboro Woolen Co., Hillsboro Bridge, N. Y.

Robert Booth has accepted the position as overseer of finishing at the Excelsior Mill of the C. A. Root Co. at Farnumsville, Mass. He was formerly employed at Knoxville, Tenn.

Richard H. McLaughlin, for the past six years purchasing agent for the W. W. Dunnell Finishing Co., Apponaug, R. I., has resigned and accepted a position as bookkeeper at North Dighton, Mass.

William Taylor has accepted a position in charge of mule spinning in No. 6 Mill of the Nashua Mfg. Co., Nashua, N. H.

Archie Connors has accepted a position as overseer of finishing at the Clinton Mills, Woonsocket, R. I. He was formerly employed at the Blackstone Mfg. Co., Blackstone, Mass.

George Foster has accepted the position as boss dyer at the Perseverance Worsted Mills, Woonsocket, R. I. He was formerly engaged at the Nasonville Woolen Co., Nasonville, R. I.

Charles McGill has accepted a position as overseer of finishing at the Somerville Mfg. Co., Somerville, N. J., succeeding William Balmford, resigned.

F. S. Klebart, formerly superintendent at the Columbiaville Woolen Mills, Columbiaville, Mich., has taken half interest in the J. W. Linnehan Co., Franklin, Mass. He has been succeeded at the Columbiaville Woolen Mills by George Dick, formerly superintendent at Beaver Dam, Wis.

J. L. Jackson, superintendent and designer at the Paton Mfg. Co., Sherbrooke, Canada, has severed his connections with this firm.

Charles S. Cody, overseer of finishing at the Mystic Woolen Co., Old Mystic, Conn., has resigned, and is succeeded by William Kennedy.

William Goff, engineer at the Ray Mills, Franklin, Mass., for a number of years, has resigned to accept a similar position at Proctorsville, Vt., under former agent James F. Symes.

John A. Fitzgerald has accepted a position as overseer of dressing spooling and warping with the Dwight Mfg. Co., Chicopee, Mass. He was formerly employed at Pawtucket, R. I.

Stewart J. Smith has been promoted to the position as agent of the Ray Mills, Franklin, Mass. He was formerly employed at the Burlington Mills, Winooski, Vt. He succeeds Raymond S. Bartlett, who has been given a position in the Boston office of the American Woolen Co.

Alfred Petzold, assistant designer at the Pemberton Mills, Lawrence, Mass., has accepted a similar position at the Nashua Mfg. Co., Nashua, N. H.

F. E. Steele has accepted a position as overseer of carding at the Burgess Mill, Pawtucket, R. I. He was formerly employed at the Boston Mfg. Co., Waltham, Mass.

J. H. Turcoote, overseer of ring spinning at the Home Cotton Mills, St. Louis, Mo., has resigned.

William A. Thienert, overseer of spinning at the Northern Ohio Blanket Mills, Cleveland, Ohio, has resigned.

Fred Inman, who has been master mechanic at the Peace Dale Mfg. Co., Peace Dale, R. I., has resigned.

William Orr, overseer of spooling in the Renfrew Co. Lowel Mill, Adams, Mass., has resigned after 40 years of valuable service. Is succeeded by William Ferguson.

Robert Blackwood, overseer of weaving at the Blanding Mfg. Co., Providence, R. I., has resigned and returned to the Weybosset Mill, where he was formerly employed.

John J. Carey has resigned his position as general manager of the Lockhardt Mills, Lockhardt, S. C., on account of ill health. He is succeeded by Alfred Moore, who has been general manager and superintendent of the Tucapau Mills at Tucapau, S. C.

George Bidwell has accepted a position as overseer of finishing at the Putnam Woolen Co., Putnam, Conn. He was formerly employed at the Nashua Valley Mills, Clinton, Mass.

Joseph Carter has accepted a position as overseer of finishing with the Ludlow Woolen Co., Ludlow, Vt. He was formerly employed at the Pioneer Woolen Mills, Pittsfield, Me.

James Quinn, overseer of finishing for the C. A. Root Co., Uxbridge, Mass., has resigned, and his successor is Joseph Shaughnessy, Plymouth, Mass.

H. F. Butler has accepted a position as overseer of finishing at the Wakefield Mfg. Co., Wakefield, R. I. He was formerly employed by E. E. Hilliard & Co., but more recently by Geo. N. Weston, Jersey City, N. J., selling mill supplies.

Harry Haigh, formerly overseer of dyeing at the Maine Woolen Co., Old Town Me., has accepted the position as overseer of dyeing with the Clinton Woolen Mfg. Co., Clinton, Mich.

William Hawkins has accepted a position as overseer of spinning for the B. B. & R. Knights Mill at Centerville, R. I., filling the position made vacant by the resignation of Harry Duhame, who held this position for several years.

John Casey of Dryden, N. Y., but more recently overseer of carding at the Middlesex Mills, Camillus, N. Y., has accepted the position as overseer of carding at the Seneca Woolen Mills, Seneca Falls, N. Y.

Fred W. Greenhalgh, formerly second hand in the weaving room of the Peace Dale Mfg. Co., Peace Dale, R. I., has accepted the position as overseer, succeeding John A. Thomas, resigned. Daniel R. Dixon has been promoted to the position as second hand.

George W. Kendry has resigned his position as overseer of weaving and designing for the Mann & Stevens Co., East Brookfield, Mass.

Frank J. Ward, formerly overseer of carding at the Angus Park Mfg. Co., East Glastonbury, Conn., has resigned.

T. B. Cahill has accepted a position as loom fixer at the Northern Ohio Blanket Mills, Cleveland, O.

Thomas Johnson has accepted a position as second hand in the dressing department at the Queen City Mills, Burlington, Vt.

John C. Webster, who has been connected with the Emmons Loom Harness Co. of Lawrence was pleasantly surprised at his home at 50 Laurel St. by a number of girls in the knitting room with a beautiful and costly gold watch, chain and Masonic charm. He was employed as foreman of the knitting room for the past twenty-five years.

Joseph J. Heap, overseer of spinning at the Charles J. Amidon & Sons' mill at Hinsdale, Mass., has resigned and was presented with a meerschaum pipe by the help under his employ.

Charles Sager, overseer of carding at the Lawrence, Webster Co., Malone, N. Y., has resigned and accepted a position with the Utica Steam Knitting Co. No. 5 Mill, Clayville, N. Y. At the close of the work hour on Saturday he was presented with a solid gold chain watch fob and a pair of gold sleeve buttons, diamond set.

Joseph G. Stone has accepted position as second hand in the weaving room of the Arctic Mills, Arctic, R. I. He was formerly employed at Anthony, R. I.

William Crawford has been appointed second hand of weaving in the New Bristol Mills, New Bedford, Mass., under overseer William Cotton. Mr. Crawford is a superior workman, and has been employed for a number of years in the Whitman Mills of that city.

Cornelius F. Riordan has accepted the position as second hand in the spinning department at Franklin, N. H. He was formerly employed at Harrisville, N. H.

Deaths.

Benjamin F. Phillips, one of the best known woolen manufacturers, died at his home on Crandall Street, Adams, Mass., January 26th. He had enjoyed his usual health until a short time before the end. He was born in the old Phillips homestead in that town, February 7, 1817, and lacked but a few weeks of being 90 years of age. After attending the public schools, he went into a wool carding mill and remained working there until 1850. He soon entered into partnership with

Stoel Dean under the firm name of Dean & Phillips, in the manufacturing of woolen goods, what is now known as the Berkshire Mills, No. 1. He later built a mill known as the Maplegrove Mills. In 1893, they organized what was known as the Phillips Woolen Company. For the past ten years, Mr. Phillips had not been engaged in active business.

Shechaniah Walker, formerly boss finisher for the Davis & Brown Woolen Mills of Uxbridge, Mass., died at his home in that place January 29th after an illness of several months. Mr. Walker was born in Batley, Yorkshire, England, in 1859 and came to this country in 1865. He came to Uxbridge in 1892 and worked for the Calumet Woolen Company, now known as the Stanley Woolen Company. He was a member of the National Association of Woolen and Worsted Overseers and held the position as president for some time until he was taken sick. Some time ago, Mr. Walker was taken suddenly ill in the Davis & Brown Woolen Mill at Uxbridge, and had to be taken to his home. He attended the last meeting at the American House, Boston, of the National Association of Woolen and Worsted Overseers and his many friends grieve to hear of his death. He was considered one of the best finishers in the business and had held that position for a number of years in leading mills. He is survived by a wife, two daughters and a son.

William Ring, a retired manufacturer of woolen yarn died Friday, Feb. first, at his home 420 Lyceum Ave., Roxborough, Pa. He was in Chester Co. in 1830.

Charles Horwill, who was formerly an overseer in the Worcester Knitting Co. mill, at Milbury, Mass., died at his home in Ludlow, Vt., age 63 years, leaves a wife and one son.

Frank Holt, formerly a prominent hosiery manufacturer of Laconia, N. H., died at his home in Tilton, N. H., Feb. 6th. Shortly before his death, Mr. Holt, while engaged in shoveling the path in front of his home was taken with a dizzy spell, and on entering his home a physician was summoned, but before his arrival life was extinct. He is survived by a widow and daughter.

Edward D. Comins, prominent woolen manufacturer died at his home in New Worcester, Mass., Sunday, Feb. 10th. He was born at Charlton Depot, Mass. in 1833. At the age of seventeen he taught school in Spencer and Carlton, and graduated from the Bridgewater Normal School in 1860. In 1862 he was elected principal at the grammar school at Quincy Point, and two years went as principal of the Thomas School at Worcester. In 1884 he went into woolen manufacturing in Worcester and has since been associated with his sons, Erving E. and Arthur C.; the firm being conducted under the name of Comins & Co. He was a representative of the Legislature in 1893, and six years director of the Free Public Library, and a Trustee of the Dean Academy at Franklin.

James Lawe died at his home, 69 Parker St., Springfield, Mass., Feb. 15th, after an illness of several weeks. He was a native of Kirkham, England, and made his home at Ludlow for the past 40 years. When the manufacturing plant of the Ludlow Mfg. Co. was removed from East Braintree to Ludlow, he accepted the position as superintendent and foreman for this company.

Joseph Martin, formerly a resident of South Manchester, Conn., died recently at Newport, R. I. He was the founder of the Glastonbury Knitting Co., of Addison, Conn., and more recently connected with the needle factory at South Manchester.

Albert Horton, treasurer of the Queen Dyeing Co., Providence, R. I., died at the Waldorf-Astoria Hotel, New York, on Friday, Feb. 22d. The funeral was held from his residence in Providence. He was a son of Robert and Martha Horton. He was born in Lowell, Mass., May 24th, 1834. He received an early training and common school education. At the age of 14 his family moved to Pawtucket, where he took up employment with the Dunnell Mfg. Co., at that time a large bleaching, dyeing and printing plant. He gradually worked himself up until he became the manager. He served with this company until he was 44 years of age, when he removed to Providence and organized the Queen Dyeing Co.

Myron E. Evans, president of the J. H. Bragdon & Co., publishers of the Textile Manufacturer's Journal, was instantly killed in the wreck of the White Plain Express on the Harlem, R. I., Saturday evening, Feb. 16th. Mr. Evans was a nephew of Mrs. Bragdon and was active in the reorganization and incorporation following the death of Mr. Bragdon, the founder of the Journal, and has been connected with the company since that time. He was a civil engineer by profession and connected with a number of business enterprises. A widow and two young children survive him.

Henry M. Wilcox, for many years a manufacturer of cotton warps at Millbury, Mass., died at his home in that town after an illness of a few days, Feb. 27th. He was born in Johnston, R. I., 70 years ago, and has made his home at Millbury for the past 30 years. He is survived by his wife and a daughter.

James H. England, who was employed at No. 11 Mill of the Amoskeag Corp'n, Manchester, N. H., as overseer of dressing, died at his home in that city Feb. 25th. He had been ill for a number of years, and was highly esteemed by his fellow workmen.

Lyman Nichols, treasurer of the Continental Mills, Lewiston, Me., and identified with other manufacturing and business corporations as director and stockholder, died at his home in Boston January 28th at the age of 64 years. Mr. Nichols belonged to a family which has been identified with New England cotton manufacturing interests for many years.

New Publications.

[Any work noticed under this head can be obtained through the office of this journal.]

The Textile Year Book for 1907.

Marsden & Co., publishers of the "Textile Mercury," at Manchester, England, have issued the second edition of "The Textile Year Book: Cotton," which is a valuable compilation in convenient form of information relating to cotton manufacture. A great amount of information is given, boiled down to the essence of facts. A carefully arranged index enables any desired information to be quickly found. Following is an abstract of the table of contents: Raw Material; Opening and Preparing; Ginning, Carding, Combing, Drawing, Slubbing, Ring Frames, Travelers, Rings; Spinning: Mules, Hank Rovings, Drafts, Costs and Comparisons, Testing Yarn and Cotton, Yarn Lengths and Weights, Roller Covering; Doubling, Reeling, Bundling, Cop and Hank Dyeing; Thread, Lace and Hosiery Yarns: Processes and Machines, Ticket Numbers and Yarn Counts; Waste, Wadding and Banding; Weaving: Winding, Warping, Beaming, Sizing, Looms, Plaiting and Pressing; Bleaching, Finishing and Mercerizing; Motive Power, Boilers and Engines; Shafting and Driving; Ventilation and Lighting; Spinning Patents; Associations and Societies; Holidays in Cotton Districts.

While of course the book is prepared from an English standpoint, it contains a great deal of valuable information for American cotton mill men. We can supply it for $1.25 a copy. It is of pocket size, handsomely bound in red flexible leather.

The Roving Frame; by Clement J. Charnock, M. E.; 144 pages, 5 by 7; John Heywood, London. Price $1.50.

This book begins with a brief and interesting account of the early history of the roving frame. This is followed by a technical description of the roving frame as now used, the scope of the work being indicated by the following abstract of the table of contents: Correct Belt Driving; Size of Bobbin; Care of Frame; Lubrication; Drafting; Roller Weighting: Gauge of Rollers; Roller Leathers; Roller Clearers; Calculations; Irregular Bobbins; Waste; Continuous Spinning; Flyers; Bobbins; Static Electricity, etc.

Universal Technical Lexicon (Lexikon der gesamten Technik); by Otto Lueger; Deutsche Verlags-Anstalt, Stuttgart, Germany. Price of each part, $2.00.

Parts 18, 19 and 20 of this work, recently received, confirm the conviction formed by an examination of the previous instalments that this work will form one of the most complete technical lexicons ever published. It is being compiled by Herr Lueger with the assistance of a large corps of leading German scientists and engineers. The text is in German.

Swedish Textile Directory, 1907; compiled by J. Hyberg; N. J. Gumpert, Guthenberg, Sweden.

We have received a copy of this directory, which contains a list of all the textile mills in Sweden, giving the size of each, class of work done, names of officers and amount of capital stock.

Business Literature.

The Horse: Joseph Dixon Crucible Co., Jersey City, N. J.

A very attractive booklet containing suggestions, carefully selected from authoritative sources, for the proper care of the horse both in and out of the stable. The book will appeal to all those who own or handle horses and a copy will be sent on request.

Fans, Blowers, and Exhausters; Green Fuel Economizer Co., Matteawan, N. Y.

A 96-page book giving dimensions for 290 sizes and types of steel plate fans and for 27 styles and types of exhausters for handling shavings, wool and other light materials, also for a line of steam and hot water heating coils. Several installations are described in detail. There are also many pages of tables and data relating to air-moving engineering, tables of capacities, speeds and horse powers for steel plate fans. A copy of the book will be sent free to anyone interested.

Fabrics We Are Printing and How We Do It.

The American Printing Co., at Fall River, Mass., and New York City, have issued a most attractive book describing the lines of work they are now doing and filled with interesting views of their great plant at Fall River, as well as color reproductions of their product. While it is impossible for any pictures to do justice to this immense plant, it enables one to get a very good idea of it and the Fall River Iron Works in which the cloth is woven. The bleaching and printing production of this plant is 100,000 pieces weekly, printed on 29 printing machines. The mills weave 78,000 pieces a week, requiring 1,500 bales of cotton, 459,000 spindles and 13,000 looms. From a typographical standpoint the book is of the highest order.

Knitting Mill Machinery.

James Taylor, 121 Arch Street, Philadelphia, is now settled in his new establishment, where he has much larger quarters than before, and is carrying a large stock of all classes of machinery used in the knitting trade. Mr. Taylor has recently made some large purchases of complete knitting mill plants, and is offering them in lots to suit buyers.

The American Moistening Company, Boston, Mass., report a large number of orders for their system of humidifying and are at this time employing nine gangs of men who are installing their humidifiers, exclusive of those employed in their Southern organization, where there is also a large volume of work, this system of air-moistening being generally recognized throughout the South.

A number of former students and graduates of the Lowell Textile School held a reunion on Saturday, Feb. 23d, at the Waverly House, in Lowell. Plans for a local textile club were brought up and discussed, and a committee appointed to go into the subject carefully and report at a second meeting, to be held March 30th.

The Hussong Dyeing Machine.

The Hussong dyeing machine built by the American Dyeing Machine Co., Camden, N. J., is very successfully used where skein yarn is dyed. It is durable, economical, and dyes evenly, in addition to leaving the material in good condition. Up to within a few years ago nearly all skein yarn was dyed by hand labor. Inventors wrestled with the problem and perfected several devices for automatically moving the yarn through the dye liquor. In the Hussong dyeing machine the principle of moving the material through the liquor has been discarded, the order being reversed and the liquor moving back and forth through the yarn. The skeins are held on dyesticks and the direction of the flow of the liquor is reversed by a characteristic device. The Hussong dyeing machine is especially adapted for dyeing sulphur blacks and the American Dyeing Machine Co. will gladly furnish further information and guarantee satisfaction.

Remarkable Growth.

When almost every machine building establishment is turning out a product limited only by its capacity it must be a remarkable growth that is worthy of special notice. This seems to be the case with the American Blower Company, of Detroit, Mich., which reports in the last year an increase of 40 per cent. over the previous year. One addition has followed close on the heels of another until the company has at last no more room left to grow in. The engine department, which a few years ago was almost a side issue, is now taking first place and forcing an entire rearrangement of the plant. This is largely due to the new vertical self-oiling engine which has met with great success. A large addition to their steel plate fan shop is now complete and will be ready for occupancy within a month.

Removal.

E. F. Schofield, dealer in all grades of cotton waste, pulled and fleeced wools, foreign noils, carpet wools, etc., has removed his main office from 256 Church St., New York, to the Mariner & Merchant Bldg., 3d and Chestnut Sts., Philadelphia. A branch office will be conducted at the old New York address.

The B. F. Sturtevant Co. of Boston, Mass., is installing for the Textile Machine Works, Reading, Pa., a complete emery dust exhausting arrangement consisting of steel plate exhaust fan and dust collector.

The Arabol Mfg. Co., 100 William Street, New York, are headquarters for soluble oils, Alizarine Assistants, Turkey Red oils, of different percentages for use in finishing, dyeing, printing, etc., as well as for sizing and finishing compounds for textile goods of every description. Their extensive factories in Brooklyn, equipped with up-to-date laboratories and under expert and scientific management, are prepared to meet any demand, and their goods have an enviable reputation.

Large Water Wheel Contract.

Sixty carloads of machinery, aggregating 750 tons, will be required to complete the enormous installation of turbines in the plant of the Aluminum Company of America at Massena, N. Y., formerly owned by the St. Lawrence River Power Co. The Dayton Globe Iron Works Company of Dayton, O., are filling this contract, which includes 24 turbines, developing 24,000 H. P. The installation will be made from July to October, taking the place of another turbine plant which failed to meet the present requirements. The Dayton works are crowded with orders. Their output last year exceeded that of any previous year in the history of the company, and the indications are that the present year will break all former records.

Thread Guide Case.

In the case of L. T. Houghton of Worcester, vs. the Whitin Machine Works for infringement of patent relating to an improved thread guide for spinning and twisting machines and for an improved form of thread guide support, a decision was handed down on February 12 by the Circuit Court of Appeals reversing the decision of the Circuit Court and holding that there was an infringement of the Houghton idea and patent.

Change of Name.

The Wisconsin Manufacturing Company of Two Rivers, Wis., have recently changed their name to the Wisconsin Textile Manufacturing Company, and inform us that they have lately increased their capacity to ten times its former output, and that they are ready now to make shipments much more promptly. This they have been compelled to do owing to the gradual and steady growth of their business. This concern manufactures a line of spools for the silk, wool, worsted, and cotton trades, and a complete line of forms for hosiery, mitten, glove and underwear trades. One of their particular claims is that manufacturing as they do where the timber grows, they are in a position to select stock of the most superior quality.

Sample Cards.

The Hatheway-Sheffield Company, 394 Canal St., off West Broadway, New York, are having good success in their new sample card shop. They know the business thoroughly, and just what is required for mounting sample cards, color cards, and all work of that description. Their operatives are competent, neat, and understand their business.

Tenter drying equipments are being installed by the B. F. Sturtevant Co. of Boston, Mass., for the U. S. Finishing Co., Providence, R. I.; Lowell Bleachery, Lowell, Mass.; Farwell Bleachery, Lawrence, Mass.; and apparatus for drying webbing for Lebanon Textile Mills, Lebanon, Pa.

A New Buffalo Office.

The H. W. Johns-Manville Company has opened a new branch office at 124 Main Street, Buffalo, under the management of C. H. Schmidt, formerly connected with the company at Milwaukee. This makes the fourth new branch office that this company has recently established to meet the demands of its growing business, which covers everything in the way of asbestos, magnesia and electrical products.

Supply House Moves its Factory.

Owing to the rapid increase in their business, the Ferrary Brothers Co., manufacturers and importers of silk mill supplies, are moving their factory from Paterson, N. J., to the corner of Jasper and Orleans Streets, Philadelphia. They are about to install some of the most modern shuttle, spool and quill machinery in the market and expect to have everything in running order by the middle of April. It is their purpose to make their new headquarters the most complete supply house in Philadelphia for reeds, harnesses, shuttles, quills, spools and all kinds of imported and domestic weavers' tools.

Enlarging Their Plant.

The Berlin Construction Co., Berlin, Conn., has received a contract for building an extension to the fan shop of the Green Fuel Economizer Co., at Matteawan, N. Y. The latter company has recently done a heavy business in fans and this addition will enable them to more than double their present output. A shop has also been put up exclusively for manufacturing the new patent Green steam and hot-water heating coil. The pressure of business in these lines and also in the manufacture of fuel economizers, has compelled the Green Fuel Economizer Co. to acquire for building purposes several acres of land adjacent to the present property.

The Thomas W. Irwin Mfg. Company of Allegheny, Pa., are equipping the following plants with the Irwin system of skylighting; The machine and bucket shop of the Wheeling Corrugating Company, Wheeling, West Va.; the Riverside Bridge Company, Martins Ferry, Ohio; the storage building of the Singer Manufacturing Company, Elizabethport, N. J.; and the new addition of the American Clay & Machinery Company, Bucyrus, Ohio.

An Up-to-date Mill Heating Installation.

The new mill of the Blackstone Manufacturing Co. of North Smithfield, R. I., contains 40,000 spindles, and is a structure of three stories and basement, 366 ft. long by 130 ft. wide. On the east end is a picker house, 100 by 67 ft. in plan, two stories and basement high, the latter being used as a dust room. At the west end is a weave shed, 89 by 130 ft. in plan, composed of one story and a full story basement. Both wings are built to carry additional stories in the future to the full height of the mill if desired, and the total frontage of the mill as now existing is 522 ft. with a depth of 130 ft. for most of this distance.

The mill building is heated on the indirect system, consisting of steel plate fans and heaters installed by the B. F. Sturtevant Co., Boston, Mass. The heating coils and fans are located near the centre of the west basement wall and the warm air is delivered to a number of vertical brick distributing flues by a horizontal concrete duct running beneath the basement floor along the entire course of this wall. The heating coils are located practically at the centre of the duct which has a cross sectional area of 8,640 sq. in. opposite the coils. The coils consist of a bank of about 12,000 ft. of 1-in. pipe and the air is forced through the system by two 10 1/2 ft. Sturtevant fans, each direct-connected to a 10 by 12 in. engine. The typical vertical distributing flue starts from the basement with a 40 by 26 in. section, decreasing to a 20 by 26 in. section on the third floor. The openings from these for the supply of each floor are 20 in. sq. in sectional area with the exception of the third story opening, which has 20 by 24 in. dampers. The bottoms of the damper openings are located 10 ft. above the floor level. Thence the air is forced across the entire width of the building, a distance of 130 ft., and is thoroughly distributed. Perfectly equable temperature is thereby maintained. The slight excess of air pressure within the building tends to outward leakage.

Convention of Asbestos Men.

Last month the officers and branch and department managers of the H. W. Johns-Manville Co. held their annual convention at headquarters, 100 William St., New York City. This company, which manufactures everything in the way of asbestos, magnesia and electrical products, brings its representatives together every year from its many branch offices throughout the country and topics pertaining to the business are discussed, which is not only profitable but interesting. The convention wound up with a banquet at the Waldorf-Astoria.

Recent Textile Patents.

CALENDER ROLLERS for Producing Embossed or Raised Patterns. 842,890. Johannes Kleienewefers, Crefeld, Germany.

CARDS, FEEDER for Intermediate. 844,741. Olof G. Petterson, Worcester, and James J. Rae, Cherry Valley, assignors to Channing Smith, Cherry Valley, Mass.

COTTON CHOPPING Machine. 842,727. Samuel H. Tucker, Gatesville, Texas.

COTTON GATHERING Apparatus. 843,294. James F. O'Shaughnessy, New York, N. Y.

COTTON GIN. 844,442. Louis David, Montgomery, Ala.

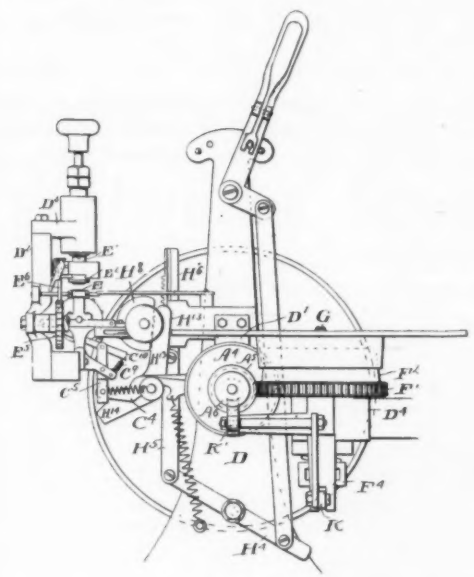
COTTON PICKER. 844,331. Oliver H. P. Cornell, Atlanta, Ga., assignor of one-half to Charles H. Blair and Herbert G. Ogden, Jr., New York, N. Y.

EMBROIDERING MACHINE. 842,854. Arthur Burgess, John G. Rehfuss and Martin O. Rehfuss, Philadelphia, Pa., assignors to Joseph H. Bromley, Philadelphia, Pa.

FABRIC OPENING and Stretching Apparatus. 844,316. William Birch, Lower Broughton, Eng.

FABRICS. Machinery for Measuring and Marking. 842,435. Andrew H. Sutton, New York, N. Y., assignor to Parks & Woolson Machine Co., Springfield, Vt.

In measuring-machines generally used for marking fabrics, numbers indicating the units of length are printed periodically upon the selvage of the goods as the fabric is fed along. This method of continuously marking has been found objectionable for many reasons known to the trade, and it is one of the objects of this invention to provide a machine in which the recording and marking mechanism shall be so placed as to allow the fabric to pass freely through the measuring-machine without marking of any kind, the recording and mark-



ing mechanism being meanwhile properly advanced, so that the total number of measured units may be printed on the end of the piece and may be duplicated on a card to be attached to the piece as a tally or check on the quantity sold from that piece. In connection with this recording device an indicating mechanism is provided by which the number of units measured from any given point on the fabric may be observed by the operator. The various mechanisms which go to make up these recording and indicating devices are so constructed and arranged that they may be released at will and returned to their initial position.

The accompanying drawing presents an end elevation of the machine viewed from that end on which the measuring mechanism is located.

FIREPROOFING TEXTILE MATERIALS. 844,042. William H. Perkin, Jr., Manchester, Eng.

INDIGO COLORING MATTERS. Reducing. 843,566. Robert Wimmer, Ludwigshafen-on-the-Rhine, Germany, assignor to Badische Anilin & Soda Fabrik, Germany.

LACE MACHINE CARRIAGES. Machine for Threading and Unthreading. 843,487. Frederick C. Pare, Nottingham, and John C. Richmond, Chilwell, England.

LACE WITH METAL. Coating. 844,304. John A. Daly, Washington, D. C.

LOOM FILLING DETECTING Mechanism. 843,196. John V. Cunniff, Fall River, Mass., assignor to Draper Co., Hopedale, Mass.

LOOM FILLING EXHAUSTION Indicating Mechanism. Automatic. 843,169. Jonas Northrop and Walter F. Roper, Hopedale, Mass., assignors to Draper Co., Hopedale, Mass.

LOOM LAPPET. 843,177. William A. Robinson, Woonsocket, R. I., assignor to Manville Co., Providence, R. I.

LOOM LET OFF Mechanism. 843,181. Charles F. Roper, Hopedale, Mass., assignor to Draper Co., Hopedale, Mass.

LOOM LUG STRAP. 842,176. George G. Colby, Medford. Mass.

LOOM PATTERN MECHANISM. 844,736. Benjamin F. McGuiness, Worcester, Mass., assignor to Crompton & Knowles Loom Works, Worcester, Mass.

LOOM PROTECTOR and Smash Preventing Mechanism. 842,944. Randolph Crompton. Worcester, Mass., assignor to Crompton-Thayer Loom Co., Worcester, Mass.

LOOM SELVAGE MOTION. 844,404. Charles F. Roper, Hopedale, Mass., assignor to Draper Co., Hopedale, Mass.

LOOM SHUTTLE. 843,912. Frank H. Stetson, Lawrence, Mass., assignor to U. S. Bobbin and Shuttle Co., Providence, R. I.

LOOM FOR WEAVING Tufted Fabrics. 843,358. Edward Paruszewski, Cottbus, Germany.

LOOM. WEFT REPLENISHING. 843,107. W. F. Roper, Hopedale, Mass., assignor to Draper Co., Hopedale, Mass.

LOOM WEFT REPLENISHING Mechanism. 842,683. Lester Miller, Yonkers, N. Y.

LOOMS. AUTOMATIC TENSION Device for. 844,523. Emanuel Keuser, Philadelphia, Pa., assignor of one-half to Jacob Hotz, Philadelphia, Pa.

LOOMS. CLOTH FINISHING Device for. 844,848. Edward Bloom, Paterson, N. J., assignor of one-half to Harry Arohnson, Paterson, N. J.

LOOMS. SELVAGE FORMING Attachment for. 843,884. Theodore Garisio, West Hoboken, N. J.

LOOMS. SMASH PREVENTER for. 842,820. Thomas W. Tillman, Columbus, Ga., assignor to Crompton-Thayer Loom Company, Worcester, Mass.

LOOMS. THREAD PARTER for Weft Replenishing. 842,666. Denis M. Hollins, Blackburn, Eng., assignor to Draper Co., Hopedale, Mass.

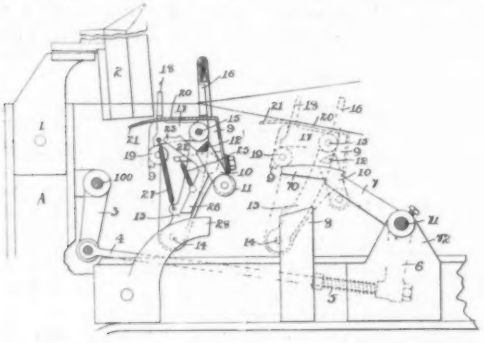
MEASURING MACHINE. Cloth. 844,739. Turner H. Nance, Talladega, Fla.

MEASURING AND MARKING Machinery. Fabric. 842,435. Andrew H. Sutton, New York, N. Y., assignor to Parks & Woolson Machine Co., Springfield, Vt.

SHUTTLES IN LOOMS. Mechanism for Changing. 841,492. Ernest James Entwisle, Barnsley, Eng.

This relates to mechanism for attachment to looms so that a weft-charged shuttle may be automatically supplied in exchange for the shuttle from which the weft has been exhausted, or in which the weft has broken or failed. Its object is the production of means that shall enable these functions to be performed in looms of high speed without diminishing their speed or reducing the production, these means being of such construction and arrangement as to enable them to perform their functions with the greatest precision and without the risks of damages to the shuttles and other parts heretofore encountered when high rates of speed have been attempted to be attained.

The accompanying drawing is a sectional end elevation of a sufficient portion of a loom to illus-



trate the application of the invention. Certain of the operating parts are shown in two positions in broken and full lines.

SHUTTLE RELEASE MOTION. 844,874. John W. Killpartrick, Lowell, Mass.

SPINDLES. Bobbin Clutching Means for Rotatable. 844,368. George W. Knight, Hopedale, Mass., assignor to Sawyer Spindle Co., Portland, Me.

SPINNING MACHINE. 843,448. Johann G. Fahr. Gottmadingen, Baden, Germany.

SPINNING OF TEXTILE FIBRES. Means for Facilitating the. 842,921. Richard Todd, Heaton Chapel, and Jesse A. Stott, and Abraham H. Stott, Manchester, England.

SPINNING AND TWISTING APPARATUS. Ring. 843,810. Joel Hayden, Jr., Boston, Mass., assignor to Hayden Machinery Co., Boston, Mass.

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Silk Dress Goods; "Mirage;" Lehigh Valley Silk Mills, South Bethlehem, Pa.

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Broadcloths; "Imperial;" Morris Rosenbaum's Sons, New York City.

Cotton Piece Goods; "Princess;" Charles C. Copeland & Co., New York City.

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Velveteens; "Chevreau;" N. Erlanger, Blungart & Co., New York City.

Velveteens in a Black Shade; "Tyrian;" N. Erlanger, Blungart & Co., New York City.

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Sewing Cotton or Cotton Thread; "Buffalo Brand;" The Clark Thread Co., Newark, N. J.

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Cotton Shrunks; "I X L;" Collins & Co., New York City.

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Veilings; "Mercedes;" Weil Brothers, New York City.

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Silk Piece Goods; "Relion;" Leerburger & Hesslein, New York, N. Y., assignors to the Holmes Silk Co., Paterson, N. J.

Cotton Thread; "Echo;" New England Cotton Yarn Co., Boston, Mass.

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The addresses of builders of mill machinery and dealers in mill supplies, whose names appear in the following classified index, may be found upon referring to their advertisement. The Alphabetical Index to advertisers follows this classified list. Buyers who are unable to find in these classified lists such machinery or supplies as they desire, are invited to communicate with the publishers, who can, in all probability, refer them to proper sources.

Advertisers whose names do not appear under desired headings will please notify the publishers. Such omissions are accidental, not intentional.

Air Moistening System.
American Moistening Co.
Bell Pure Air & Cooling Co.

Architects and Mill Engineers.
Ferguson, John W.
Main, Chas. T.

Asbestos Products.
Johns-Manville Co., H. W.

Asphalt Floors.
Simpson Bros. Corporation.

Asphalt Tanks.
Scaife, W. B., & Sons.

Automatic Feeds for Cotton and Wool.
American Drying Machinery Co.
Harwood, Geo. S., & Son.
Kitson Machine Co.
Leigh, Evan A.
Philadelphia Drying Machinery Co.
Philadelphia Textile Machinery Co.
Schofield, Wm., Co.
Woonsocket Machine & Press Co.

Automatic Warp Tying Machines.
Barber-Colman Company.

Bale Ties.
DeHaven Manufacturing Co.

Balling Machine.
Diamond Textile Machine Works.
Torrance Mfg. Co.

Bandings.
——See under Yarns.

Baskets.
Lane, W. T., & Bro.
Morris & Co.

Belting.
Gandy Belting Co.
Main Belting Co.
Norwich Belt Mfg. Co.
Shultz Belting Co.
Ulmer Leather Co.
——See also Mill Supplies.

Belt Dressing.
Cling Surface Mfg. Co.
Dixon, Jas.., Crucible Co.
Shultz Belting Co.
Stephenson Mfg. Co.
Ulmer Leather Co.

Belt Lacing Machines.
Birdsboro Steel Foundry & Machine Co.

Bindings.
——See Tapes and Braids.

Bleaching Kiers.
Allen, Wm., Sons Co.
Arlington Mch. Wks. (Arthur Birch, prop.)
Textile Finishing Machinery Co.

Bleaching Materials.
Bosson & Lane.
Roessler & Hasslacher Chemical Co.

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American Blower Co.
Barney Bentilating Fan Works.
Green Fuel Economizer Co.
Mass. Fan Co.
New York Blower Co.
Philadelphia Drying Machinery Co.
Sterling Pipe & Blower Co.
Sturtevant, B. F., Co.
Schnitzler, Chas. H.

Bobbin Covers.
Kolb, Frank E.

Bobbin and Spool Machinery.
Defiance Machine Works.
Murkland, J. W.

Bobbins, Spools, Shuttles, Etc.
American Supply Co.
American Textile Specialty Mchy. Co.
Leigh, Evan A.
Speed & Stephenson.
Tebbets, E. L., & Co.
Wilson & Co.

Boiler Cleaners.
Johns-Manville Co., H. W.

Boiler Compound.
Johns-Manville Co., H. W.

Boiler Inspection and Insurance.
——See Steam Boiler Insurance.

Boilers.
——See Steam Boilers.

Boxes, Cloth Boards, Etc.
Pearson, J. T.

Box Shook.
Connecticut Box Company.

Braiding Machinery.
New England Butt Co.
Textile Machine Works.

Braids.
——See Tapes, Braids and Edgings.

Bridges.
Scaife, W. B.., & Sons.

Brushers.
——See Napping Machines.

Brushes.
Felton, S. A., & Son Co.
Mason Brush Works.
Parks & Woolson Machine Co.

Burr Pickers.
Curtis & Marble Machine Co.
Sargent's, C. G., Sons.
Smith & Furbush Machine Co.

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Arlington Mch. Wks. (Arthur Birch, prop.)
Birch Bros., Somerville Machine Wks.
Butterworth, H. W., & Sons Co.
Rice, Barton & Fales Co.
Taunton, New Bedford, Copper Co.
Textile Finishing Mchy. Co.
——See also Dyeing, Bleaching, Machinery, etc.

Canvas Baskets.
Lane, W. T., & Bro.
Morris & Co.

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Riverdale Woolen Co.

Carbonizing Machinery.
American Drying Machinery Co.
Birch Bros., Somerville Machine Wks.
Philadelphia Drying Machinery Co.
Philadelphia Textile Machinery Co.
Sargent's, C. G., Sons.

Card Clothing.
Ashworth Bros.
Bowes, L. M., Co.
Leigh, Evan A.
Riley, C. E., Company.
Stoddard, Haserick, Richards & Co.

Carded Cotton.
Blaisdell, S., Jr., Company.
Indian Orchard Company.
Wonalancet Company.

Card Feeds
——See Automatic Feeds.

Card Grinding Machinery.
Entwistle, T. C., Co.
Leigh, Evan A.
Riley, C. E., Company.
Smith & Furbush Machine Co.
Stoddard, Haserick, Richards & Co.

Carders' Tools.
Brown, Wm. H., Co.

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Mitshkun, M., Co.

Carpet Machinery.
Altemus, Jacob K.
Curtis & Marble Machine Co.
Parks & Woolson Machine Co.
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Smith & Furbush Machine Co.

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Farrell Foundry and Machine Co.
Schofield, Wm., Co.

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Maryland Casualty Co.

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Scaife, W. B., & Sons.

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Yale & Towne Mfg. Co.

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Roessler & Hasslacher Chemical Co.
Solvay Process Co.

Chemists.
Little, Arthur D.

Cling Surface.
Cling Surface Mfg. Co.

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Pettes & Randall Co.

Cloth Boards.
Chaffee Bros.
Pearson, J. T.
Smythe, J. L. N. Paper Co.

Cloth Cutting Machinery.
——See Cutting Machinery.

Cloth Stretchers.
Arlington Mch. Wks. (Arthur Birch, prop.)
Leyland, Thomas, & Co.
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Clutches.
American Tool & Machine Co.
Hunter, James, Machine Co.

Color Kettles.
Rice, Barton & Fales Machine & Iron Company.

Combs (Wool and Cotton).
Hood, R. H.
Leigh, Evan A.
Lowe, Stephen C.
Philadelphia Textile Machinery Co.
Riley, C. E., Company.
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Concrete Work and Construction.
Simpson Bros. Corporation.

Consulting Electrical Engineer.
Puffer, William L.

Conveyors, Pneumatic.
——See Blowers & Blower Systems.

Cop Spindles.
American Textile Specialty Mchy. Co.

Cop Tubes.
American Textile Specialty Mchy. Co.
——See Paper Tubes.

Copper Print Rollers.
Rice, Barton & Fales Machine & Iron Company.
Taunton, New Bedford, Copper Co.

Coppersmiths.
Badger, E. B., & Sons Co.

Copper Work for Dyers.
Butterworth, H. W., & Sons Co.
Textile Finishing Machinery Co.

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Irwin, Thos. W., Mfg. Co.

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Scaife, W. B., & Sons.

Cotton.
Blaisdell, S., Jr., Co.
Charles, W. B.
Riley, C. E., Company.
Stoddard, Haserick, Richards Co.
Tolar & Hart.
Wonalancet Company.

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Cotton Machinery.
Altemus, Jacob K.
American Textile Appliances Co.
American Textile Specialty Mchy. Co.
American Drying Machinery Co.
Ashworth Bros.
Barker, James.
Butterworth, H. W., & Sons Co.
Crompton & Knowles Loom Works.
Curtis & Marble Machine Co.
Diamond Textile Machine Works.
Draper Company.
Easton-Burnham Co.
Elliott & Hall.
Entwistle, T. C., Co.
Firth, William, Co.
Hetherington, John, & Sons, Ltd.
Howard & Bullough American Mach. Co.
Kilburn, Lincoln & Co.
Kip-Armstrong Co.
Kitson Machine Co.
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Lowell Machine Shop.
Mason Machine Works.
Metallic Drawing Roll Co., The.
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Philadelphia Textile Machinery Co.
Providence Machine Co.
Rice, Barton & Fales Co.
Riley, C. E., Company.
Saco & Pettee Machine Shops.
Schofield, Geo. L.
Smith & Furbush Machine Co.
Stafford, G. W., Mfg. Co.
Stoddard, Haserick, Richards & Co.
Textile Finishing Machinery Co.
Whitin Machine Works.
Woonsocket Machine & Press Co.

Cotton Openers and Lappers.
Howard & Bullough American Mach. Co.
Kitson Machine Co.
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Riley, C. E., Company.
Stoddard, Haserick, Richards & Co.

Cotton Softeners.
Bosson & Lane.
Nicetown Mfg. Co.
Zurn, O. F., Co.

Cotton Waste.
Blaisdell, S., Jr., Co.
Charles, W. B.
Schofield, Edwin F.

Cranes.
Yale & Towne Mfg. Co.

Crayons.
Dixon, Jos., Crucible Co.
Lowell Crayon Co.

Cutter for Knit Goods.
Langston, Samuel M.

Dextrine.
Stein, Hirsh & Co.

Dobbies.
Crompton & Knowles Loom Works.
Stafford, G. W., Mfg. Co.

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Metallic Drawing Roll Co., The.

Dryers.
American Blower Co.
American Drying Machinery Co.
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Birch Bros., Somerville Machine Wks.
Boston Blower Co.
Buffalo Forge Co.
Butterworth, H. W., & Sons Co.
Hunter, Jas., Machine Co.
Kenyon, D. R., & Son.
Mass. Fan Co.
Philadelphia Drying Machinery Co.
Sargent's, C. G., Sons.
Sturtevant, B. F., Co.
Textile Finishing Machinery Co.
Whiteley, William, & Sons, Ltd.
Vacuum Process Co.

Drying Boards.
Bull, William C.
Pearson, J. T.

Dusters.
——See Wool and Waste Dusters.

Dust Collectors.
Knickerbocker Co., The.
Philadelphia Drying Machinery Co.
Sterling Blower & Pipe Mfg. Co.
Sturtevant, B. F., Co.

Dyers, Bleachers and Finishers.
Brophy's, T., Sons.
Davidson, J. F.
Fairhill Bleachery.
Firth & Foster Co.
Greenwood, R., & Bault.
Home Bleach & Dye Works.
Ingrahamville Dye Works.
Lorimer's, The Wm. H. & Sons Co.
Pawtucket Dyeing & Bleaching Co.
Peerless Co.
Providence Mills Mfg. Co.
Rowland, Samuel.

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Aiton Machine Co.
Allen, William, Sons Co.
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American Drying Machinery Co.
American Dyeing Machine Co.
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Curtis & Marble Machine Co.
Entwistle, T. C., Co.
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Heathcote, John, & Son.
Hopkins Machine Works.
Hunt, Rodney, Machine Company.
Hunter, James, Machine Co.
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Klauder-Weldon Dyeing Machine Co.
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Rice, Barton & Fales Co.
Schwartz, L. H. A., & Co.
Smith, Drum & Co.
Sirocco Engineering Co.
Sturtevant, B. F., Co. (Drying).
Textile Finishing Machinery Co.
Tolhurst Machine Works.
Vacuum Process Co.
Whiteley, William, & Sons, Ltd.

Dye House Cans.
Hill, James, Mfg. Co.

Dye House Floors.
Simpson Bros. Corporation.

Dye House Trucks.
Bailey, Frank.

Dye Sticks.
Bailey, Frank.
Haedrich, E. M.

Dye Tubs.
——See Tanks, Tubs and Vats.

Dyestuffs and Chemicals.
American Dyewood Co.
Atteaux, F. E., & Co.
Berlin Aniline Works.
Bischoff & Co.
Bosson & Lane.
Cassella Color Co.
Continental Color & Chemical Co.
Kalle & Co.
Ford, J. B., Co.
Geisenheimer & Co.
Johnson, Chas. A., & Co.
Klipstein, A., & Co.
Leyland, Thos., & Co.
Metz, H. A., & Co.
Roessler & Hasslacher Chemical Co.
Solvay Process Co.
Sykes, Walter F., & Co.
Thayer, Ed. M., & Co.

Dynamos.
——See Electric Lighting.

Edgings.
——See Tapes, Braids and Edgings.

Electrical Construction.
Crocker-Wheeler Co.
General Electric Co.
Sturtevant, B. F., Company.
Westinghouse Electric & Mfg. Co.

Electrical Engineer (Consulting.)
Puffer, William L.

Electrical Heating Devices.
Johns-Manville Co., H. W.

Electrical Supplies.
Johns-Manville Co., H. W.
Pettingell-Andrews Co.

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General Electric Co.
Mass. Fan Co.
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Philadelphia Textile Machinery Co.
Sterling Blower & Pipe Mfg. Co.
Sturtevant, B. F., Co.
Westinghouse Electric & Mfg. Co.
Wing, L. J., Mfg. Co.

Electric Hoists.
Yale & Towne Mfg. Co.

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Pettingell-Andrews Co.
Sturtevant, B. F., Company.

Electric Lighting.
General Electric Co.
Sturtevant, B. F., Company.
Westinghouse Electric & Mfg. Co.

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Crocker-Wheeler Co.
General Electric Co.
Peerless Electric Co.
Sturtevant, B. F., Company.
Westinghouse Electric & Mfg. Co.

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Salem Elevator Works.

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Walther, Otto.

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Consolidated Engine Stop Co.
Engineers (Power Plant).
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Sterling Blower & Pipe Mfg. Co.
Sturtevant, B. F., Co.

Fans—Exhaust and Ventilating.
——See Ventilating Apparatus.

Feed Water Heaters.
Green Fuel Economizer Co.
Harrison Safety Boiler Works.
Scaife, W. B., & Sons.

Feed Water Pumps.
Goulds Mfg. Co.

Feed Water Purifiers.
Harrison Safety Boiler Works.
Philadelphia Water Purification Co.
Scaife, W. B., & Sons.
United Water Improvement Co.

Feeds.
——See Automatic Feeds.

Felt Hardeners.
Farrell Foundry and Machine Co.

Felting Machinery.
Farrell Foundry and Machine Co.

Filters.
American Water Softener Co.
Norwood Engineering Co.
Phila. Water Purification Co., The.
Scaife, W. B., & Sons.
United Water Improvement Co.

Finishing Machinery.
——See Dyeing, Drying, Bleaching and Finishing.

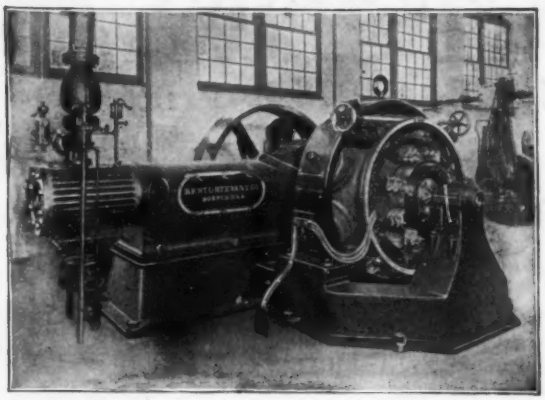
Fire Brick.
Borgner, Cyrus, Co.

Fire Extinguishers.
Badger, E. B., & Sons Co.
Johns-Manville Co., H. W.

Fire Hose.
Eureka Fire Hose Co.

Fire Hydrants.
Norwood Engineering Co.

Alphabetical Advertising Index, with page numbers, follows this list.



This 75 k.w. Sturtevant Generating Set

is but one of a complete line of 36 standard sizes ranging from 3 k. w. to 100 k. w., with vertical, horizontal and vertical-compound engines. They require the minimum of attention. All engine bearings are mechanically fed with oil, the running gear is entirely enclosed. The generators are built for endurance.

Bulletin No. 143 describes them.

B. F. STURTEVANT CO., BOSTON, MASS.

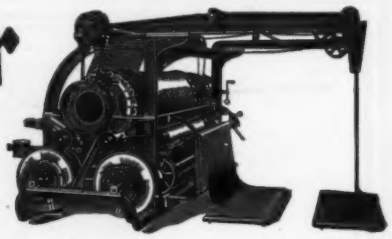
General Office and Works, Hyde Park, Mass.

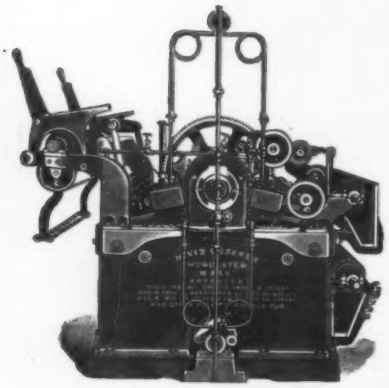
New York Philadelphia Chicago Cincinnati London

Designers and Builders of Heating, Ventilating, Drying and Mechanical Draft Apparatus; Fan Blowers and Exhausters; Rotary Blowers and Exhausters; Steam Engines, Electric Motors and Generating Sets; Pneumatic Separators; Fuel Economizers; Forges; Exhaust Heads, Steam Traps, Etc. 592

David Gessner

Worcester, Mass.





Latest Improved Cloth Finishing Machinery

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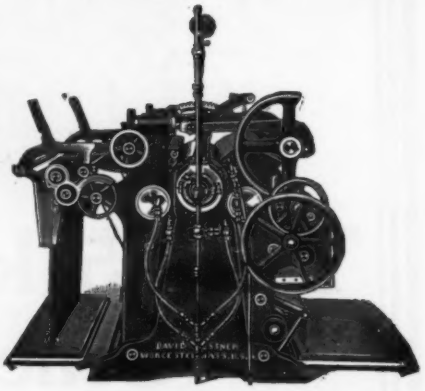
Napping Machines and Presses a Specialty



Fire Insurance.
Home Insurance Co.

Fire Proof Doors and Windows.
Badger, E. B., & Sons Co.
Irwin, Thos. W., Mfg. Co.

Fire Pumps.
—See Pumps.

Flax, Tow, Hemp and Jute Machinery.
Haskell-Dawes Machine Co.
Fairbairn-Lawson-Combes-Barbour, Ltd.

Fluted Rolls.
Diamond Textile Machine Works.
Hood, R. H.
Leigh, Evan A.
Riley, C. E., Company.
Thurston, A. G., & Son.

Flyers.
Bodden, Wm., & Son, Ltd.
Hopkins Machine Works.
Leigh, Evan A.

Forges.
Sturtevant, B. F., Co.

Forwarders.
Salvator Transfer, Inc.

Friction Clutches.
National Brake & Clutch Co.

Friction Cones.
Evans, G. Frank.

Fuel Economizers.
Green Fuel Economizer Co.
Sturtevant, B. F., Co.

Fulling Mills for Woolen Goods.
Hunt, Rodney, Machine Co.
Hopkins Machine Works.
Hunter, Jas., Machine Co.
Kenyon, D. R., & Son.

Furnaces (Automatic Smokeless).
Murphy Iron Works.

Garnetts.
Leigh, Evan A.
Smith & Furbush Machine Co.

Gas Blowers and Exhausters.
Sturtevant, B. F., Co.

Gas Engines.
Jones, Lewis.

Gassing Machines.
Stubbs, Joseph.

Gauges.
Crosby Steam Gage & Valve Co.
Walworth Manufacturing Co.

Gears.
Farrell Foundry and Machine Co.
New Process Raw Hide Co.
Philadelphia Gear Works, Inc.

Gear Cutting.
Farrell Foundry and Machine Co.

Gear Cutting Machine.
Whiton, The D. E., Co.

Generating Sets.
Crocker-Wheeler Co.
Sturtevant, B. F., Co.

Grids for Cards.
Schaellibaum, R., Co.

Grease.
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Grease Cups.
Cook's, Adam, Sons.

Gut Cords and Strings.
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Stoddard, Haserick, Richards & Co.

Hoisting Apparatus.
Economy Engineering Co.
Yale & Towne Mfg. Co.

Hosiery Boards.
Pearson, J. T.

Hosiery Labels.
Beck, Charles, Paper Co.
Kaumagraph Company.

Humidifying Apparatus.
American Moistening Co.
Bell Pure Air & Cooling Co.

Hydraulic Rams.
Power Specialty Co.

Hydro Extractors.
American Tool & Machine Co.
Broadbent, Thomas, & Sons.
Hunt, Rodney, Machine Company.
Riley, C. E., Company.
Stoddard, Haserick, Richards & Co.
Textile Finishing Machinery Co.
Tolhurst Machine Works.
Whiteley, William, & Sons, Ltd.

Illuminating Engineer.
Puffer, William L.

Insulating and Braiding Silks.
Sauquoit Silk Mfg. Co.

Insurance (Casualty, Fire and for Loss of Profits.)
Home Insurance Co.
Maryland Casualty Co.

Ironing Machines for Knit Goods.
Craw, J. W., Laundry Machinery Co.

Jacquards.
Halton's, Thomas, Sons.

Knit Goods, Edgings, Trimmings, Etc.
Chapin, Geo. W.
Charles, W. B.
Cheney Bros.
Friedberger-Aaron Mfg. Co.
Krout & Fite Mfg. Co.
Weimar Bros.

Knit Goods, Finishing Machines, Crochet, Etc.
Craw, J. W., Laundry Machinery Co.
Eastman Machine Co.
Hunt, Rodney, Machine Company.
Langston, Samuel M.
Merrow Machine Co., The.
Nye & Tredick Co.
Scott & Williams.
Union Special Machine Co.
Wilcox & Gibbs Sewing Machine Co.

Knitting Machine Cylinders.
Paxton & O'Neill.
Stafford & Holt.

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Note that our heddles are now made out of narrower wire.

This makes them lighter in weight and permits plenty of light in harness.

Our New Stop Motion is simplicity itself.

Will work on any number of shafts, no extra entering of drop wires because no drop wires are required. It is all in the heddles and shafts. Our heddles can be used, or German wire heddles, just as you choose.

Steel Heddle Manufacturing Co.

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Knitting Machinery.
Boss Knitting Machine Co.
Brinton, H., & Co.
Claes & Flentje.
Cooper, Chas.
Crane Mfg. Co.
Excelsior Knitting Machine Mfg. Co.
Gormly, Robt. W., & Co.
Grosser Knitting Machine Co.
Hemphill Mfg. Co.
Jenckes, E., Mfg. Co.
Jones, Lewis.
Kinsey, Walter.
Koch, Edward W.
Lamb Knitting Mach. Mfg. Co.
Leighton Machine Co.
Mayo, Geo. D., Knitting Machine Co.
Mayo Knitting Machine & Needle Co.
National Automatic Knitter Co.
Nye & Tredick Co.
Paxton & O'Neill.
Ruth Machine Co.
Scott & Williams.
Stafford & Holt.
Standard Machine Co.
Taylor, James.
Tompkins Bros.
Walter & Co.
Walther, Otto.
Wildman Mfg. Co.

Knitting Needles and Supplies.
Breedon's Wm., Son.
Brinton, H., & Co.
Continental Latch Needle Company.
Cooper, Chas.
Corey, Wm., Co.
Crane Mfg. Co.
Dodge Needle Co.
Excelsior Needle Co.
Grosser Knitting Machine Co.
Ives, L. T., Co.
Jarrard Needle Company.
Kolb, Frank E.
Lamb Knitting Machine Mfg. Co.
Manufacturers' Supplies Co.
Mayo Knitting Machine & Needle Co.
Page Needle Co.
Ruth Machine Co.
Treat, Orlon.
Wardwell Needle Co.

Labeling Machines.
Beck, Chas., Paper Co., Ltd.

Lamps, Incandescent.
General Electric Co.
Pettingell-Andrews Co.
Westinghouse Electric & Mfg. Co.

Lawyers (Mercantile).
Yeomans & Ironside.

Leather for Textile Use.
Bowes, L. M., Co.
Ulmer Leather Co.

Loom Clutches.
Natl. Brake & Clutch Co.

Loom Pickers.
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Draper Company.
Kilburn, Lincoln & Co.
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Mason Machine Works.
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Whitin Machine Works.

Loopers.
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Cook's, Adam, Son.
Borne, Scrymser Co.
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Stead, Arthur.
Taylor, James.

Machinists' Tools.
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Mails.
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Elliott & Hall.
Parks & Woolson Machine Co.

Mechanical Draft.
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Goss & Bryce.
Green Fuel Economizer Co.
Massachusetts Fan Co.
Sturtevant, B. F., Co.

Mechanical Engineers.
American Blower Co.
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Philadelphia Drying Machinery Co.
Prather Engineering Co.
Sturtevant, B. F., Co.

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Murphy Iron Works.

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Oil & Waste Saving Machine Co.

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Cook's, Adam, Son.
Excelsior Wool Oil Compound Co.
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New York & New Jersey Lubricant Co.
Stephenson Mfg. Co.
Zurn, O. F., Co.

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Smythe, J. L. N., Paper Co.

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Hunt, Rodney, Machine Company.
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Crosby Steam Gage & Valve Co.
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Norwood Engineering Co.
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United Water Improvement Co.

Quillers.
Foster Machine Co.
Payne, G. W., & Co.

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Walworth Mfg. Co.

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Feingold, H. & D.

Ribbons.
Cheney Bros.

Ring Travelers.
DeHaven Mfg. Co.
Shaw, Victor, Ring Traveler Co.

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Griffin Roofing Co.
Lincoln Waterproof Cloth Co.
Standard Paint Co.

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Plymouth Cordage Co.

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Ruberoid Roofing.
Standard Paint Co.

Sample Cards.
Hatheway-Sheffield Co., The.

Scallop Machines.
Merrow Machine Co.

Schools.
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International Correspondence Schools.
Lowell Textile School.
New Bedford Textile School.
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Excelsior Wool Oil Compound Co.

Wool Shoddies.
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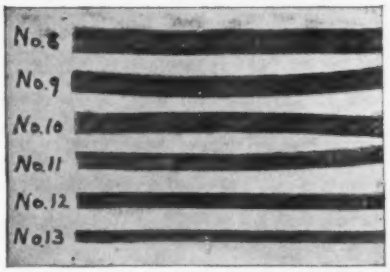
are stronger than leather or rawhide and more flexible



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Orswell Mills.
Ravine Mills.
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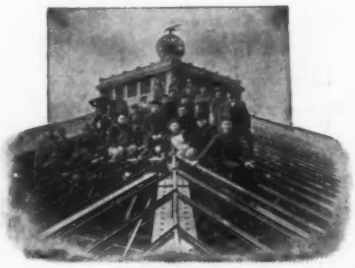

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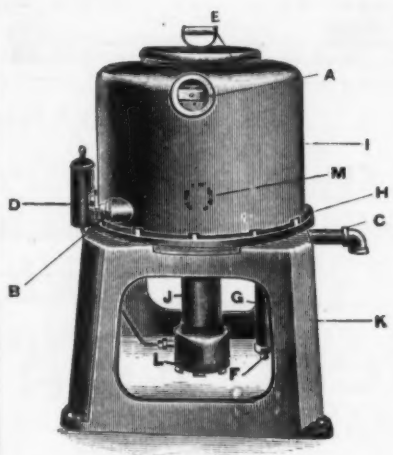

CHART

A—Exhaust. **B**—Steam Jet. **C**—Oil Outlet. **D**—Oil cup. **E**—Cover. **F**—Plug (for removing dirt in trap). **G**—Oil Trap. **H**—Cap Screws (for holding shell to base). **I**—Shell. **J**—Column. **K**—Base. **L**—Step Bearing. **M**—Brake.

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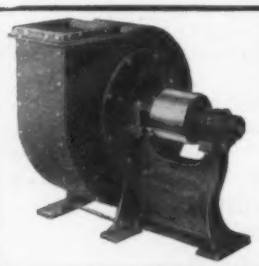

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Warren's Pulley Cover transmits all the power.

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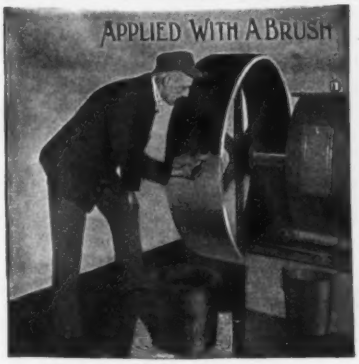

WANTS, FOR SALE, ETC.

Rates, 15 cents a line per issue when replies are sent in care of TEXTILE WORLD RECORD to be forwarded. If replies go direct to advertiser the rate is 10 cents per line per issue. Count seven words to a line and include side head and address. Cash must accompany the order for these ads. If such ads. are "displayed" the rate is $2.00 per inch single column each time.

Second Hand Machinery For Sale.

1-40 end Huse Winder.
1-40 end Lindsay & Hyde Winder.
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1-40 end Payne Spooler.
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15 Union Special Finishing Machines.
2 Union Special Twin Needle Machines.
1 Union Special Flat Bed Interlock M'chine.
4 Union Special sidewheel cylinder M'chines.
2 Union Special Overseamers.
5 Union Special Dewees Trimmers.
12 Tompkins two cylinder knitting tables.
12 Tiffany & Cooper Border, Drawer and Cuff Machines.
An assortment of W. & W., Singer and W. & G. Sewing machines.
1 Power driven rotary rib cutting machine
1-28 inch Sanborn Paper Cutter.
1 Foot Power Shirt Neck Marker.
1 Bruce Power driven Band Folding Machine.
1-400 Light Dynamo.
29-92 inch Knowles Looms 4 x 4 box.
52 Knitting Machines. Scott & Williams, N. & T., Stafford & Holt and S. & F. makes, sizes 7 to 20 inches.
25 Sleevers, McM. & W., Scott & Williams, N. & T., Stafford & Holt and Snyder & Fisher makes, sizes 4 1-4 to 4 3-4 inches.

We are constantly receiving additions to this list and request inquiries on any wants in the second hand machinery line.

We are always pleased to quote prices and give full information promptly.

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Will buy Odd Lots of Yarn of Any Kind. Send Samples and Cash Price.

FOR SALE. (1) Broadbent Coning Machine, 80 Spindles, 6 inch Drum (Cone or Tube.) From Skein or Cops.

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Fales & Jenks Combined Warp and Filling Twisters.

1 Twister 100 Spindles.
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All with 7 in. Traverse 2 ¼ inch ring, 3 inch space, Rabbeth No. 94 Spindle with knee brakes, Creels 8 high. All in good condition, can be seen running at

SCHADEWALD MILLS,
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Rooms with Power for Rent.

About 30,000 sq. ft. floor space, with power to suit. Has always been used, and is especially adapted for textile purposes.

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Desirable Manufacturing Sites

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Write for particulars stating your requirements.

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OILS and CHEMICALS

Cream Softeners, Turkey Red Oil, (all grades) Soluble Oils and Olive Oil.

235 No. Front Street, PHILADELPHIA.

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Manufacturing plants and sites on Delaware River and three railroads; suitable for all lines of work especially textile. Correspondence solicited and concessions made. T. W. TRAINER & CO.,
Cambridge Building, Chester, Pa.

FOR SALE.

A one sett woolen mill, 3 story building. 2 blanket looms, new; two 6/4 looms, good. Equipped ready to run. 5 acres of land; water and steam power. 6 miles from 2 trunk lines of railroad. Address **Frank E. Brown, Roanoke, Va.**

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Financial Assistance to Manufacturing Corporation or Lumbermen desiring location

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$6,000 per Acre

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WANTED
Manufacturers to Make Fleeced Undershirts for Export

¶ There is a large market in China for these goods. The undershirts are used in small sizes; some open in front like the coat shirt; some half way open. They run about 25½ inches long, 15 inches across the chest, sleeves 18 inches, have pearl buttons down the front, and are made similar to a boy's undershirt. To any manufacturer who desires to enter into an arrangement for manufacturing these goods a sample will be sent. I am familiar with this market and will be pleased to give full particulars to interested parties.

C. M. Horch, 12 Coenties Slip, New York.

A Splendid Mill to Rent

This mill is ninety by fifty feet and five stories high, brick lined and equipped with Grinnell Sprinklers. Connected with the mill is a brick lined Boiler House with a new 80 H. P. Boiler, a Picker House, Dye House and Dry House.

The mill is run by water but has a new 35 H. P. Engine to use if necessary and is wired throughout for Electricity and for an Eco Magneto Watch Clock.

Apply to Cole Mfg. Co., Lakeport, N. H.

FOR SALE

Two Noble Combs in good working order. Can be seen running. S. B. & B. W. Fleischer, Inc., 25th and Hamilton Sts., Phila., Pa.

FOR SALE.

A Worsted Mill.

Consisting of 16 Crompton & Knowles Broad Worsted Looms; also Winding, Spooling, Warping, Dyeing and Finishing Machinery,— in first class condition. Will sell Machinery and rent buildings, Power Plant, etc., if desired. Good chance for a practical man. Location unsurpassed for help, transportation and market. Address R. R. Street & Co., 184 Washington St., Chicago.

COTTON MILL WANTED.

Advertiser might be interested in proposition to buy well-located mill of from 5,000 to 10,000 spindles either yarn or cloth, provided the machinery equipment was good and the price right. Northern mill preferred, but no objection to the South. Address "Proposition," care of Textile World Record, Boston, Mass.

MACHINERY AGENCY WANTED.

WANTED—Agency for first class manufacturer of Textile Machinery and Appliances, by young man (Swiss) with technical and mechanical education. Well acquainted with the best manufacturers of silk and cotton fabrics in Switzerland, Germany, Austria and Italy. Address "Energetic," care of Textile World Record, Boston, Mass.

Manufacturing Building For Sale.

Over 200 horse power, water and steam. 65,000 feet floor ace. Piped for steam heat, ga-, automatic sprinklers, sp . To close an estate will be sold very, very cheap, on etcy terms. Box 152, Seneca Falls, N. Y.
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Accounts Wanted. We have good connections, central offices, and experience in handling dry goods, and are open to represent any good firms for their line of goods: ribbons, silks, velvets, neckwear, novelties, for Penna. Will furnish references. Ware & Company, Manufacturers' Agents, 908 Walnut St., Philadelphia.

Superintendent Wants Position. Position as superintendent or foreman in knitting mill, manufacturing sweaters, golf jackets, toques, cotton-wool or merino hosiery. Twenty-eight years' experience. Strictly temperate. Best of references. Address Box 48, Geneva, N. Y.

Wanted. A reliable and practical man to take charge of finishing room of knit goods factory. One who is capable of handling help, getting out the proper production and nicely finished work; one who thoroughly understands the care of finishing machines, especially the various style Merrow machines, as on these particular machines he must be an expert. Unless a thorough, practical man on Merrow machines, he could not hold the position. We have the right position for the right man. Address H. V. Wentzel Knitting Mills, Reading, Pa.

Wanted Boss Knitter capable of looking after wool and cotton ribs. Address "Boss," care Textile World Record, Boston.

Wanted an Experienced Weaver.

Can have a chance to start for himself. Address New York Corduroy Mill, 432 East 71st Street, New York City.

Selling Agent With Established Trade

wishes to take interest in going worsted plant or join practical manufacturer as designer in starting small dress goods mill. State full particulars. Address "Established," care Textile World Record, Boston.

WANTED.

2½ and 2¾ diameter, ¼ automatic hosiery machine for children's. State what guage, whose make and lowest cash price. Address, Box 41, Barnesville, Ga.

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Thousands of men have been promoted and are receiving **higher pay** as a result of studying with the International Correspondence Schools. Their **SCHOOL OF TEXTILES** conducted at New Bedford, Mass., by an expert staff of **Practical Instructors** is devoted solely to teaching Cotton and Woolen Manufacturing and the Weaving and Designing of Fabrics.

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Stop and consider how you can increase your knowledge, obtain a higher position, earn more pay and perform more congenial work by taking one of the following fifteen complete, concise, practical I. C. S. Textile Courses.

Complete Cotton Manufacturing	Cotton Designing
Cotton Carding and Spinning	Woolen and Worsted Designing
Cotton Warp Preparation and Plain Weaving	Complete Woolen Manufacturing
Fancy Cotton Weaving	Woolen Carding and Spinning
Cotton Carding, Spinning and Plain Weaving	Worsted Warp Preparation and Weaving
Yarn Reeling, Winding and Warping	Woolen Carding, Spinning and Weaving
Complete Textile Designing	Woolen Warp Preparation and Weaving
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C. P. BROOKS, Principal

International Correspondence Schools, Textile Department, **Box 836. New Bedford, Mass.,**

for a free copy of Personal Experiences of 500 I. C. S. Textile Students, state which of the above courses you are interested in and give your name, occupation, age, house address, business address, city and state.

You can now buy our library of textile information without becoming a student; inquire for prices.

WANTED.

First class boss weaver superintendent for broad silk mill. Must be thoroughly experienced with English looms, hard silk warps, and handling help. State reference and salary. Address "Broad," care Textile World Record, Boston, Mass.

The Cotton Manual

BY J. T. BROADBENT

of the Bradford-Durfee Textile School, Fall River, and formerly of the Mississippi Textile School.

This little Manual was prepared with the idea of telling briefly, but comprehensively, the things about the cotton fibre, its cultivation, and the ginning and marketing of the cotton crop, the different kinds of cotton, and other matters bearing on raw cotton, such as the average student or person connected with cotton manufacturing or the sale of cotton goods, wants to know.

There are excellent chapters on cotton baling, describing the different kinds of bales and baling processes, and on the opening and mixing of cotton in the mill, with account of different machines employed, and improved methods of mixing.

The book contains about 100 pages, with 20 illustrations, and should be in the possession of every person having to do with cotton in any state, from the seed to the retail purchaser.

Price 75 Cents

Published by LORD & NAGLE COMPANY

144 CONGRESS STREET, BOSTON, MASS.

SITUATIONS WANTED.

The following advertisements are a portion of those of superintendents and overseers, of whom full particulars are on file at this office. Manufacturers who may be in need of such men may address them in care of Textile World Record, or state their requirements directly, and the addresses of suitable men will be furnished without charge.

Mr. C. T. Donlevy, a practical mill overseer and superintendent, who has a wide acquaintance with mill men, is now a member of the Textile World Record staff, and gives special attention to this department. He would be pleased to hear from any of his friends who may be interested.

WOOLEN SUPERINTENDENTS.

Superintendent, Assistant or overseer of carding in a large mill. Position wanted by a man 29 years of age, American, married. Worked on shirting, sateens, print cloths, satin and Marcella quilts, familiar with Saco & Pettee, Whiton, Mason, Lowell, Kitson, Woonsocket, Providence, Crompton & Knowles machines. Good references. 3872, Textile World Record.

Superintendent Woolen or knitting mill. Position wanted by a man 40 years of age, American, married. Has had a wide experience on all kinds of woolen and worsted goods. Familiar with the American and English machinery. Good references. 3882, Textile World Record.

Assistant Superintendent and designer or overseer of dressing in a worsted mill. Position wanted by a man 31 years of age, German, married. Worked on kerseys, beavers, chinchillas, coverts, venetians, broadcloths, flannels and carriage cloths. Could be employed at once and at moderate salary. Good references. 3893, Textile World Record.

Agent, or Supt. and Designer. Position wanted by a man 40 years of age, married and American. Is experienced on fancy worsteds, woolen kerseys, thibets, overcoatings and dress goods. Is familiar with all kinds of woolen machinery. Good references. 3574, Textile World Record.

Supt. of a Woolen Mill, or Designer. Position wanted by a man 53 years of age, German. Is experienced on all kinds of worsted, fancy and piece dyes, kerseys, beavers, flannels and robes. Is familiar with all makes of woolen machinery. Good references. 3583, Textile World Record.

Asst. Supt. Position wanted by a man 28 years of age, married and American. Has worked Kerseys, broadcloths, venetians, repellants, coverts, wool and cotton, and shoddy mix goods. Is familiar with Johnson & Bassett and Davis & Furber cards, mules, and operators, and Crompton & Knowles looms. First class references. 3568, Textile World Record.

Superintendent of small woolen mill. Piece dyed goods, thibets, Venetians, meltons, etc. 3114, Textile World Record.

Assistant Superintendent and designer, or overseer of weaving. Position wanted by a man 37 years of age; married; American. Has worked on all classes of woolen and worsted goods, ladies' and men's wear, both fancy and piece dyes. Is familiar with Crompton & Knowles looms. Good references. 3605, Textile World Record, Boston, Mass.

Superintendent and Designer. Position wanted by a man 38 years of age; married; worked on men's wear fancy worsteds, cotton worsteds, overcoatings and dress goods. Good references. 3056, Textile World Record, Boston, Mass.

Superintendent. Worked on cassimeres, unions, satinets, overcoatings, horse goods, bed blankets, linings, etc. Understands stock mixing, picking and figuring. Has had full charge of mill. 3074, Textile World Record.

Wanted, the Right Party

to build and manage a knitting factory who has one-half he capital necessary; will furnish the remainder, and have a fine water power for that purpose located in a small village in Wisconsin. Good shipping point. M. C. Phillips, Oshkosh, Wis.

COTTON SUPERINTENDENTS.

Superintendency, or overseer and designer of cotton and raw silk mill, wanted by a practical man 31 years of age, who understands the business thoroughly. Has 15 years' experience here and in Germany and two years Textile School. Best of references given. Address "Platt," care Textile World Record, Boston.

Cotton Superintendent, worked on all kinds of sheetings, sateens; all kinds of fancies, lenos and lappets, Jacquard, cotton and silk mixed. Age 35; first-class references. 1934, Textile World Record.

Cotton Superintendent of a yarn mill. Familiar with all kinds of yarns, from 20s to 120s. Used to all kinds of American and English machinery. Age 39, married; first-class references. 1364, Textile World Record.

Cotton Superintendent, or superintendent and designer. Worked on all kinds of cotton, from 20s to 150s. Also large experience on lenos and other fancy goods. Some knowledge of Jacquards. All kinds of cotton machinery. Age 39, married. 2080, Textile World Record.

Superintendent of cotton mill or overseer. Handled all kinds and numbers in yarn mills, cloth mills, colored warps, etc. Speeder, warper, spooler and spinner in the family. Age 48; American; married. 3219, Textile World Record, Boston, Mass.

Cotton Superintendent. Has been boss carder, ring spinner and comber on all kinds of cotton yarns, hosiery yarn a specialty. First-class references. Age 44; married. 3025, Textile World Record.

Superintendent or Carder and Spinner. Position wanted by a man 46 years of age, married, American. Is experienced on all kinds of regular white goods and grain bags, and is familiar with cotton and cotton waste stock. Is familiar with Kitson & Atherton pickers, Biddeford and English frames, revolving roller and top flat cards, Biddeford, Whitin and Lowell. Good references. 3624, Textile World Record, Boston, Mass.

Superintendent of cotton or woolen yarn mill or shoddy plant. Position wanted by a man 50 years of age, who has had a wide experience in the manufacture of yarns. Understands all makes of cotton and woolen machinery, also held position as superintendent in large knitting mills, and is familiar with the American makes of knitting machines. First-class recommendations. 3249, Textile World Record, Boston, Mass.

Superintendent of a bleachery or print works or assistant superintendent. Position wanted by a man, 38 years of age, an American, married. Worked on all kinds of cotton piece goods. Familiar with all kinds of machinery used in handling these goods. Now employed. First class recommendations. 3724, Textile World Record, Boston, Mass.

Superintendent or Superintendent and Designer in a cotton mill. Familiar with all lines of colored and cotton tickings, denims, shirtings, ginghams, lappet and dress goods. Worked on English and American machinery. 36 years of age, married. First-class recommendations. 3331, Textile World Record, Boston.

Cotton Superintendent or Overseer of Carding in a large mill. Position wanted by a man 44 years of age, married, American. Worked on all kind of goods made in a fine goods mill. First class references. 3489, Textile World Record, Boston.

DESIGNERS.

Designer, assistant designer or assistant superintendent. German. Woolen and worsted men's wear and ladies' dress goods. Experienced in Germany and a short time in this country. 3166, Textile World Record.

Assistant Designer. Position wanted by a young man 20 years of age. Has had two years' experience as assistant designer and pattern weaver. Worked on fancy worsted and piece dyed. Looking for a position where he can advance himself. First class references. 3877, Textile World Record.

Designer or Assistant Superintendent. Position wanted by a man 24 years, single. Has worked on wool, worsted, single and double cloth, high and low grade stock. Has had experience in some of the leading mills, and can be employed at short notice. Good references. 3878, Textile World Record.

Designer and Assistant Superintendent. Position wanted by a man 31 years of age, married, Scotch. Is experienced on cassimeres, cheviots, coverts, outing rain coatings, piece dyes and has had some experience on worsteds. Is familiar with Crompton & Knowles looms. Good references. 3625, Textile World Record, Boston, Mass.

Designer. Worked on ladies' dress goods, shirtings and flannels and some jacquard designing; first-class recommendations; 33 years of age; married. 3285, Textile World Record.

Designer or superintendent. **Age 37; English; married. Experienced in this country and England. Worked on cloakings, suitings, coverts, broadcloths, etc. Wants $30 to $40 per week. Mill closed, and wants place at once. Good references. 3140, Textile World Record.**

Assistant Designer. Position wanted by a man 21 years of age, American. Is a graduate of the Lowell Textile School, and has worked on all kinds of cotton goods, woolen and worsted dress goods and men's wear. First-class references. 3649, Textile World Record, Boston, Mass.

Designer. Position wanted by an American, 28 years of age and married. Worked on checks, plaids, madrases, cheviots, woolen and worsted suitings, fancy ginghams, gauzes, lenos, spot effects and novelties, etc. Is familiar with Crompton & Knowles plain and dobby looms, Mason plain and dobby looms and Kilburn & Lincoln plain looms. Good references. 3482, Textile World Record, Boston.

DYERS.

Bleacher and Dyer of cotton knit goods. Position wanted by a man 27 years of age, married. English. Has worked on web dyeing and bleaching, also garnet dye and bleaching, aniline black on hosiery. Will not go south. Good reference. 3763, Textile World Record, Boston.

Overseer of Dyeing. Position wanted by a man 35 years of age, American, married. Has worked on cotton and worsted yarns and worsted piece dyes. Good references. Could take position at once. 3886, Textile World Record.

Overseer of Dyeing. Position wanted by a man 39 years, American, married. Has worked on union and wool kerseys, cotton warp, meltons, raw stock, cotton yarns, worsted yarns, piece dye. Will not go West, South or Canada. Good references. 3,888 Textile World Record.

Dyer. Age 33; Scotch; unmarried. Worked on every kind of woolen cloth, serges, meltons, shoddy worsted and woolen yarn, etc. Wants $3.50 per day. Will not go South. 3064, Textile World Record.

Boss Dyer or Chemist. Worked on all kinds of cotton goods, yarns and piece, corduroy, plushes and velveteens. Familiar with all kinds of machines for bleaching, dyeing or printing. Capable of taking charge of bleaching, dyeing and printing. First-class references; German-American; 40 years of age. 3311, Textile World Record, Boston, Mass.

Overseer of Dyeing or Chemist. 24 years of age, with experience on wool, shoddies of all kinds and rags. On knitting yarns and knit goods. Understands Klander & Weldon's skein dyers and stock machines. Will go anywhere for good position. Would accept second hand position in large mill. 3399, Textile World Record, Boston.

KNITTERS.

Superintendent or Overseer of Knitting. Position wanted by a man, 35 years of age, American, married. Has worked on all kinds of goods made on spring needle machines, specialty fleeced lined goods. Familiar with Thompkins Bros., Campbell, Clute, Cooper & Wildman latch needle. Good references. 3867, Textile World Record, Boston.

Superintendent of a Knitting Mill. Position wanted by a man, 37 years of age, single. Has worked on all kinds of wool and cotton, both winter and summer underwear. Is familiar with all kinds of knitting machines. First-class references. Can be employed in about a week's notice. 3844, Textile World Record, Boston.

Overseer of Knitting. Position wanted by a man, 29 years of age, American, married. Worked on sweaters, cardigan jackets, ladies' golf jackets, wool and cotton ribbed underwear and wool overshirts. Familiar with McMichael, Wildman, Scott & Williams, Stafford & Holt, Leighton, Fisher, Nye & Tredick, Lamb, Campbell & Clute machinery. Good references. 3846, Textile World Record, Boston.

Overseer of Knitting on Lamb knitting machines. Position wanted by a man, 28 years of age, single. Has worked on ladies', men's, children's full fashioned cotton, wool, merino, silk custom work underwear. Is familiar with Lamb knitting machines and some experience on Champion. Could accept a position at once. Good references. 3856, Textile World Record, Boston.

Overseer of Knitting in hosiery mill. Worked on wool, cotton and worsted plated hosiery. Familiar with the old National, Electric, Mayo, Campbell, Standard, Branson & Hepworth loopers; McMichael & Wildman ribbers. Good references. 3859, Textile World Record, Boston.

Superintendent or Overseer of knitting. Position wanted by a man 45 years of age, married. Has worked on all kinds of ladies' and men's underwear, flat and ribbed, cotton, woolen, worsted. Familiar with Campbell & Clute, Wildman, Scott & Williams, and Cooper machines, also sewing machines, first class references. 3876, Textile world Record.

Overseer of Knitting. Position wanted by a man 29 years of age, married. Worked on fleece lined, balbriggans, mercerized cotton, fancy worsted, wool merino nets, heavy and light weight ribbed work. Familiar with Campbell & Clute, Tompkins Bros., Bromley & Crane, latch needle, Scott & Williams, Nye & Tredick, Fisher, and Wildman machines. Good references. 3881, Textile World Record.

Overseer of Latch Needle Knitting. Position wanted by a man 27 years of age, single. Has worked on almost all grades of stitchers of ladies' and gents' cotton and worsted underwear. Familiar with Scott & Williams, Wildman, Snyder, Nye & Tredick, Stafford & Holt and Fisher machines. Can take a position at short notice. Good references. 3873, Textile World Record.

Overseer of Knitting. American, 31 years of age, with 10 years' experience in knitting room as second hand and overseer. Worked on men's gauze underwear, and on plain woolen and plush work. Wants position in the East. 3350, Textile World Record.

Superintendent of a Knitting Mill. Position wanted by a man 55 years of age. Is experienced on all kinds of wool and merino underwear. Is familiar with all kinds of knitting machinery. Good references. 3620, Textile World Record, Boston, Mass.

Superintendent of Knitting Mill. Position wanted by a man 26 years of age, married, American. Is experienced on men's overshirts, balbriggan ribbed goods, fleece and novelties, and is familiar with all kinds of knitting machinery. Good references. 3637, Textile World Record, Boston, Mass.

Superintendent of Knitting Mill. Position wanted by a man 43 years of age, married, American. Is experienced on all classes of knit underwear, including fleece lined. Is familiar with Tompkins, Cooper, Snyder & Fisher knitting machines. Good references. 3645, Textile World Record, Boston, Mass.

FINISHERS.

Overseer of Bleaching. Position wanted by a man 34 years of age, English, married. Has worked on cotton bed quilts, marcellus and crochet, also yarns. Familiar with the Butterworth machines. Could be employed at short notice. Will not go West or Canada. Good reference. 3836, Textile World Record, Boston, Mass.

Overseer of Cotton Finishing. Position wanted by a man 37 years of age, married, Swede. Has worked on all kinds of cotton goods, plaids and stripes, in all departments of the finishing room. Is familiar with Butterworth finishing machinery. Good references. 3638, Textile World Record, Boston, Mass.

Foreman of Finishing or Calenders. Position wanted by a man, English, 35 years of age and married. Has worked on pocketings, silesias, satteens, linings, etc. Calender and Schreiner finishes a specialty. Understands all kinds of calenders, Buttes stretchers, stenters, dampers, mangles, etc. Good references. 3490, Textile World Record, Boston.

Overseer of Finishing or asst. supt. woolen mill. Position wanted by a man 50 years of age, married. Worked on all kinds of woolen goods, cotton warp, unions, etc. Familiar with all kinds of finishing machinery. Good references. 3875, Textile World Record.

Overseer of Finishing. Position wanted by an American, 29 years of age, not married. Worked on all kinds of dress goods, face finish worsteds, cheviots and piece dyeing. Familiar with Parks & Woolson, Hunter and all kinds of American machinery. Has good references. 3476, Textile World Record, Boston.

Overseer of Finishing in Woolen Mill. Position wanted by a man 41 years of age, married, American, finished cassimeres, fancy and cotton worsteds, beavers, meltons, dress goods, first class reference. Can take position at once. 3706, Textile World Record.

Overseer of Finishing. Position wanted by a man 32 years of age, married, American. Has worked on all kinds of cotton worsteds, fancy and piece dyed worsteds and woolens. Is familiar with all kinds of finishing machinery. Good references. 3642, Textile World Record, Boston, Mass.

Overseer of Finishing. Age 30, American, unmarried, with 6 years' experience as overseer, wants position in New England. Had experience on satinets, unions, and all goods where cotton warp is used, also on nearly all machinery used in making these goods. 3335, Textile World Record.

Overseer of Woolen Finishing. 33 years of age, married, with experience on beaver, kersey, cassimere, covert, thibet, worsted, dress goods, government goods, etc. Understands Curtis & Marble, Park & Woolson machines. 3402, Textile World Record.

Overseer of Finishing. American, first-class in every respect, with good references, wants position. Is accustomed to all classes woolen and worsted goods and all kinds of machinery used in his work. 3383, Textile World Record.

Overseer Finishing, or Stock Dyeing and Finishing. Worked on Union cassimeres, satinets, all wool cassimeres, cheviots, dress goods, meltons and kerseys; 39 years of age; single; Scotch, with first-class reference from past employers. 3449, Textile World Record.

Boss Finisher. Worked on broadcloth, cheviots, kerseys, coverts, thibets, meltons, piece dyes and dress goods. Familiar with all kinds of finishing machinery; prefers a position in Massachusetts. Age 28; American; first-class references. 3046, Textile World Record.

Overseer of Finishing. Position wanted by a man 41 years of age, married, American. Has worked on fancy cassimeres, unions, kerseys, cloakings, dress goods, friezes, cheviots, thibets, worsteds, etc. Is familiar with all kinds of finishing machinery. Good references. 2677, Textile World Record, Boston, Mass.

Overseer of Finishing. Position wanted by a man 26 years of age. Married and American. Has worked on kerseys, broadcloths, thibets, meltons, fancy worsteds, piece dyes, cassimeres, flannels, and dress goods. Is familiar with all kinds of finishing machinery. Good references. 3576, Textile World Record, Boston, Mass.

COTTON WEAVERS.

Overseer of Weaving. Worked on sheetings, twills, sateens and fancies. Wants not less than $18 per week. 3157, Textile World Record.

Overseer of Cotton Weaving. American, 45 years of age, with 26 years' experience on plain sheetings, sateens and twills as fixer, second hand and overseer. Able and temperate. Wants position in the East. 3439, Textile World Record.

Overseer of Weaving or second hand in a cotton mill. Position wanted by a man 29 years of age, American, married. Worked on all kinds of cotton goods, both plain and fancy. Familiar with all kinds of looms, Whitin, Coburn, Mason, Northrup drop boxes, Stafford, Crompton dobbies. Good reference. 3228, Textile World Record, Boston, Mass.

Overseer of Cotton Weaving. Position wanted by a man, 27 years of age, American, married, with experience on prints, cambrics, sateens, drills, corded goods, etc. Worked on Draper, Whitin, Lowell, Mason and Colvin looms. Prefers a position in the East. 3430, Textile World Record, Boston, Mass.

Overseer of Cotton Weaving. Position wanted by a man, 39 years of age, American, married. Worked on all kinds of cotton goods, plain and fancy. On English, Colvin, Mason, Whitin and Draper looms. Could take a position at two weeks' notice. First class recommendations. 3735, Textile World Record, Boston, Mass.

Overseer of Weaving or Cloth Room. Worked on heavy ducks, denims, suitings, checks, lenos, fancy lenos and lappets, from 2s to 200s yarn carded and combed. Familiar with Lowell, Whiting, Crompton & Knowles, Mason and Draper looms. First-class recommendations, 34 years of age, married, American. 3309, Textile World Record, Boston, Mass.

Overseer of Weaving. Position wanted by a man 28 years of age and married. Worked on fancy shirtings, lenos, silk dress goods, lappets and plain goods. Familiar with Jacquard machines, Mason, Crompton & Knowles and Stafford dobbies, looms. 3474, Textile World Record, Boston.

COTTON SPINNERS.

Overseer Ring and Mule Spinning. Position wanted by a man, 45 years of age, married, English. Worked on all kinds of cotton, both fine, coarse from 1s to 200s. All kinds of cotton spinning machinery. Good references. 3850, Textile World Record, Boston.

Overseer of Mule and ring spinning. Position wanted by a man 35 years of age, married and American. Has worked on cotton yarns from 20s to 120s and is familiar with Parr, Asa Lels, Hetherington, Dobson & Barlow, and Mason new rope mules, and ring frames. Good references. 3516, Textile World Record, Boston, Mass.

Overseer of mule and ring spinning. Position wanted by a man 40 years of age; married; English. Has worked on all kinds and numbers of cotton yarn. Is familiar with all makes of mules. Good references. 3607, Textile World Record, Boston, Mass.

Overseer Ring Spinning, spooling and web drawing. Position wanted by a man 39 years of age, widower. Has worked on all kinds of cotton goods. Has a boy working in the card room and a girl in the cloth room. Could be employed in a week's notice. Will not go South. Good references. 3891, Textile World Record.

Overseer of ring spinning, spooling and warping. Position wanted by a man 32 years of age, American. Has worked on denims, plaids, awnings, checks, lawns, sheetings, lenos, shirtings, etc. Is familiar with Mason, Whitin, Lowell, Davis & Furber and Fales & Jenks, spinning machinery. Good references. 3604, Textile World Record, Boston, Mass.

Overseer of Spinning, Spooling, Warping. Position wanted by a man 35 years of age, married, American. Has worked on all kinds of cotton yarns, from 20s to 120s. Is familiar with Fales & Jenks, Mason, Whitin, Saco & Pettee, and Lowell spinning machinery. Good references. 1788, Textile World Record, Boston, Mass.

WOOLEN WEAVERS.

Overseer of Weaving or Second Hand in large mill. Position wanted by a man 41 years of age, an American, married, has worked on cassimeres, fancy worsteds, suitings, dress goods and overcoatings, has had many years' experience in leading mills, understands the Crompton & Knowles looms, good references. 3703, Textile World Record.

Overseer of Weaving or Asst. Supt. Position wanted by a man 48 years of age, married. Has worked on all kinds of fancy woolen and worsted goods, wool and cotton and wool and shoddy mixes, and fancy cotton dress goods; can also design. Is familiar with Crompton & Knowles looms, Gilbert looms and dobby-heads, and Whitin plain and fancy looms. Has good references. 3501, Textile World Record.

Overseer of Woolen Weaving. Position wanted by a man 44 years of age, American, married. Worked on worsted and woolen goods of all kinds, also dress goods. Has one spooler, one sewer and one hander-in in the family. Could take position at short notice. Will not go West, South, New Jersey, New York or Canada. Good references. 3887, Textile World Record.

Overseer of Woolen Weaving. Position wanted by a man 37 years, married, American. Has worked on worsted and woolen goods of all kinds on men and women's wear. Familiar with Crompton & Knowles loom. Could take position at once at reasonable wages. Good references. 3874, Textile World Record.

Overseer of Woolen Weaving. Position wanted by a man 36 years of age; married. Has worked on satinets, unions, cassimeres, men's wear, dress goods, overcoatings and blankets. Is familiar with Knowles, Gilbert, Stafford and Crompton looms. First-class references. 1790, Textile World Record, Boston, Mass.

Overseer of Weaving, or weaver and designer. American, 40 years of age, with experience on all grades men's wear and all makes of woolen looms, pickers, spoolers, twisters, etc., wants a position in the East. 3379, Textile World Record.

Boss Weaver in Woolen Mill, or would accept a good loom fixing position. Worked on satinets, cotton and woolen warp goods, sheetings, shirtings and ducks. Also worked on cotton and woolen jute bagging. 45 years of age. 1806, Textile World Record.

Overseer of Weaving. Position wanted by a man, 39 years of age, American, married. Could take a position at short notice. Familiar with all kinds of woolen and worsted goods. First class recommendations. 3727, Textile World Record, Boston, Mass.

Overseer of Weaving. Position wanted by a man, 40 years of age, married, an American. Worked on cheviots, ladies' dress goods, janes and woolen goods of all kinds. Familiar with the Crompton & Knowles looms. Good recommendations. 3725, Textile World Record, Boston, Mass.

Woolen Boss Weaver. Worked on worsteds, woolens of all kinds, also dress goods. American; 28 years of age; married. 3231, Textile World Record.

Overseer of Weaving. Position wanted by a man 42 years of age, American, married, worked on all kinds of woolen and worsted goods, familiar with Crompton & Knowles and Crompton & Thayer and Jacquard looms, first class recommendation. 3694, Textile World Record.

Overseer of Weaving. Position wanted by a man 34 years of age, married, American. Has worked on cotton goods, cassimeres, fancy worsteds, and all kinds of woolen goods. Is familiar with Crompton & Knowles looms. Good references. 3687, Textile World Record, Boston, Mass.

Overseer of Weaving. Position wanted by a man 41 years of age, married, German. Has worked on wool and worsted goods of all descriptions, and is familiar with Crompton & Knowles and Crompton Thayer looms. First-class references. 3634, Textile World Record, Boston, Mass.

Overseer of Weaving. Position wanted by a man 39 years of age, American. Has worked on unions, cassimeres, shirtings and overcoatings. Is familiar with Crompton & Knowles looms. Good references. 3601, Textile World Record, Boston, Mass.

WOOLEN CARDERS.

Overseer of Carding. Position wanted by a man 30 years of age, married, American. Has worked on all kinds of woolen, cotton and shoddy mix goods and felts. Is familiar with all makes of American and English carding machinery. Good references. 3636, Textile World Record, Boston, Mass.

Overseer of Woolen Carding or second hand in a large mill. Position wanted by a man, 38 years of age, married, and has worked on all classes of wool, cotton and shoddy mixed goods. Understands all kinds of carding machinery. Will not go West or Canada. Could be employed at short notice. Good references. Address 3868, Textile World Record, Boston.

Overseer of Woolen Carding. Position wanted by a man 32 years of age, American, married. Worked on all kinds of woolen goods, both high and low grades and hosiery. Familiar with American and English carding machinery. Good references. 3883, Textile World Record.

Overseer of Woolen Carding. Position wanted by a man 53 years of age, American, married. Worked on American and English carding machines, and familiar with all kinds of stock, cotton, wool, and shoddy mixes. Could take position within one week's notice. Good references. 3890, Textile World Record.

Second Hand in woolen card room. Position wanted by a man 29 years of age. Worked on all kinds of stock. Could be employed at short notice. Good references. 3889, Textile World Record.

Overseer of Woolen Carding (in medium size mill) or second hand (in large mill). Position wanted by a man 24 years of age. French-American. Worked on all kinds of stock, cotton, wool, shoddy mixes. Eleven years' experience in card room. Good references. 3880, Textile World Record.

Overseer of Woolen Carding or second hand in a large mill. Position wanted by a man, 40 years of age, American, married. Has worked on all kinds of stock, cotton, wool and shoddy. Wants a position in the New England States only. Good references. 3869, Textile World Record, Boston.

Overseer of Carding. American, 36 years of age, with 6 years' experience as overseer. Has been working in large mills in Massachusetts and brings good references. Worked on all grades wool, cotton and shoddy mixes. Good manager of help and would consider a first-class second hand's position. 3375, Textile World Record, Boston.

Overseer of Carding in Small Mill, or Second Hand in Large Mill. Position wanted by a young man with good references, worked in woolen and knitting mills on D. & F., Lombard, Cleveland cards on all kinds of stock. 3693, Textile World Record.

Overseer of Carding. Position wanted by a man 42 years of age, American. Has worked on all kinds of wool, cotton and shoddy mix goods. Is familiar with Cleveland, Lombard and Davis & Furber carding machinery. Good references. 3653, Textile World Record, Boston, Mass.

Overseer of Carding. Position wanted by a man 54 years of age, English, married, has worked on all kinds of stock from the highest to the lowest, also knitting yarns. First class references from leading mills where employed. Could take position at once. 3695, Textile World Record.

Overseer of Carding and spinning. Position wanted by a man 40 years of age, American. Has worked on all kinds of stock, cotton, wool and shoddy, and all numbers of yarn from 7/8 to 8 run. Is familiar with Davis & Furber, Johnson & Bassett, Lombard, and Cleveland carding and spinning machinery. Good references. 3577, Textile World Record, Boston, Mass.

Overseer of Carding and spinning. Position wanted by a man 40 years of age, married. Is experienced on all kinds of stock and all numbers of yarn. Is familiar with Davis & Furber, Johnson & Bassett, Furbush, and Bridesburgh carding and spinning machinery. Good references. 3580, Textile World Record, Boston, Mass.

WOOLEN SPINNERS.

Overseer of Woolen Spinning. Position wanted by a man 40 years of age, American, married. Has worked on all kinds of yarn and stock. Familiar with D. & F. and J. & B. mules. Good reference. 3818, Textile World Record, Boston, Mass.

Overseer of Spinning. American, with experience on nearly all classes of woolen and worsted goods, and on all machinery used in his work, wants position in the East. Best of references furnished. Wants first-class position. 3384, Textile World Record.

Overseer of Carding and Spinning in woolen mill. Position wanted by a man 40 years of age, married. Worked on cassimeres, tweeds, ladies' dress goods, blankets, mackinaws, flannels and carriage cloths, D. & F. cards and mules and Johnson and Bassett mules. Would prefer a position in the west or middle west. 3464, Textile World Record, Boston.

Overseer of Woolen Spinning. Position wanted by a man, 45 years of age, American, married. Has worked on all kinds of stock, cotton, wool and shoddy. Familiar with the D. & F., J. & B., Brother Operators, Dancroft and Wright machines. Good reference. 3794, Textile World Record, Boston, Mass.

Overseer Woolen Spinning. Position wanted by a man 31 years, single. Has worked on cassimeres, blankets, hosiery, and all grades of fine woolen. Won't go to Main or Canada. Could take position at once. Good references. 3892, Textile World Record.

Overseer of Woolen Spinning. Position wanted by a man 42 years, American. Worked on all kinds of stock, cotton, woolen, shoddy mixes. Has had 14 years' experience as overseer. Familiar with D. & F., G. & B. and Brotherheads. Could take position at once. Good references. 3879, Textile World Record.

Woolen Boss Spinner, or would accept a good secondhand position. Familiar with all kinds of American spinning machinery; Davis & Furber, Johnson & Bassett, English mules, Curtis and Platt. First-class references; age 48; English. Could take a position at once. 589, Textile World Record.

Overseer of Woolen Spinning. Position wanted by a man, 41 years of age, American, married; worked on all kinds of wool, cotton shoddy mixed goods, from one to five run. Familiar with D. & F., J. & B. and Bridesburg spinning machines. Good recommendations. 3755, Textile World Record, Boston.

COTTON CARDERS.

Overseer of Cotton Carding or second hand position in a good mill. Position wanted by a man, 42 years of age, English, married. Worked on all classes of cotton goods. Familiar with all kinds of cotton carding machinery. Good references. 3843, Textile World Record, Boston.

Overseer of Cotton Carding. Position wanted by a man, 33 years of age, American, married. Has worked on carded and combed hosiery yarn, colored yarns and warps. Familiar with American carding and combing machinery. Good references. 3864, Textile World Record, Boston.

Overseer of Cotton Carding or Supt. of Yarn Mill. Position wanted by a man 38 years of age, married, worked on all kinds of cotton goods and all the different American carding machinery, good reference. 3699, Textile World Record.

Overseer of Cotton Carding in a large mill or carder and spinner in a small mill. Position wanted by a man, 35 years of age, American, married. Worked on white and colored work, both fine and coarse numbers. Familiar with all kinds of carding machinery. Good reference. 3784, Textile World Record, Boston, Mass.

Overseer of Carding and spinning. Position wanted by a man 36 years of age, married and American. Has worked on cassimeres, flannels, overcoatings, knickerbockers, blankets and carpet yarns. Is familiar with American and English cards and Davis & Furber and English mules. Good references. 3539, Textile World Record, Boston, Mass.

MISCELLANEOUS.

Overseer of Tenters. Position wanted by a man 28 years of age, American, married. Worked on cotton, worsted and dress goods. Has had 12 years' experience in this class of work and is familiar with the Granger & Phenix pin and clip frames. Will not go West, South or Canada. Good references. 3885, Textile World Record.

Roller Coverer, or Overseer of Roller Covering. Position wanted by a man 28 years of age, married. Has had a wide experience on all kinds of rollers used in woolen or worsted mills. Is familiar with the different methods of roller covering. Good references. 3662, Textile World Record, Boston, Mass.

Overseer of Dressing. Position wanted by a man 38 years of age, American. Has worked on all kinds of worsteds and woolens, dress goods, etc. Is familiar with Davis & Furber. Good references. 3663, Textile World Record, Boston, Mass.

Wanted: Situation as office manager or bookkeeper by a capable man of long experience. Can take entire charge, or will accept any position paying a fair salary if in line of advancement. Good references. 3521, Textile World Record.

Bookkeeper in woolen, worsted or yarn mill. Position wanted by an American, 33 years of age, married. Has the best of references. 3477, Textile World Record, Boston.

Overseer of Bleaching and Finishing. Position wanted by a Scotchman, 42 years of age, married. Thoroughly experienced in bleaching and finishing cotton piece goods, linens, etc. 18 years' experience in England, Scotland and United States. First class references from mills where employed. 3485, Textile World Record, Boston.

Overseer of Beetling Department. Position wanted by a man, 43 years of age, married, Irish. Has had ten years' experience on cotton goods in this country, twelve years' experience on linen goods in Ireland. Has worked on cotton goods of all counts from 67 by 72 to 96 by 32, also handled all kinds of beetling machines. Will not go South or Canada. Good reference. 3807, Textile World Record, Boston, Mass.

MORE MONEY
FOR TEXTILE WORKERS

Why plod along from day to day at a small salary? Why spend your life—from boyhood to old age—as a common "hand?" Others have advanced from positions similar to yours and are now Overseers, Superintendents or Designers. You can do the same. Do not wait for a "pull" to secure a better position—get the ability and the position is bound to come.

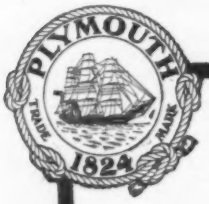
WE CAN HELP YOU

Our Textile Courses are the most thorough—the most practical—courses taught in this country. They are taught in such a simple way that it takes very little of your spare time to master them. Our course in Knitting is the only one in the country, if not in the world. Many other courses.

We can qualify you for any of the following positions. Write for our Special Textile Bulletin.

Woolen and Worsted Supt.—Woolen and Worsted Designer—Boss Woolen and Worsted Spinner—Boss Woolen and Worsted Carder—Boss Finisher—Boss Weaver—Boss Dyer—Cotton Yarn Supt.—Cotton Designer—Boss Cotton Spinner—Boss Cotton Carder—Cloth Examiner—U. S. Inspector—Buyer—Knitting Mill Supt.—Boss Knitter

AMERICAN SCHOOL OF CORRESPONDENCE
CHICAGO, - - - - - - ILLINOIS



ARE YOUR MILLS GROWING?

The question of expansion to meet the growing demands of trade is becoming a serious problem with many manufacturers, and those in this position find that much depends upon the plant having been laid out with an eye to future growth.

Now one of the vital points in a manufacturing establishment is the power plant and its adaptability to increased demands affects largely the question of growth for the whole factory.

Write for prices on "PLYMOUTH" Manila and Sisal baling rope.

The matter of installing power equipment intended to meet the requirements of future growth of the business has been greatly simplified by the use of rope drives as a means of distributing power.

Our book on "Rope Driving" goes into the whys and wherefores of this proposition and also describes the many other advantages of rope transmission. Sent free to power plant owners.

Plymouth Cordage Co.

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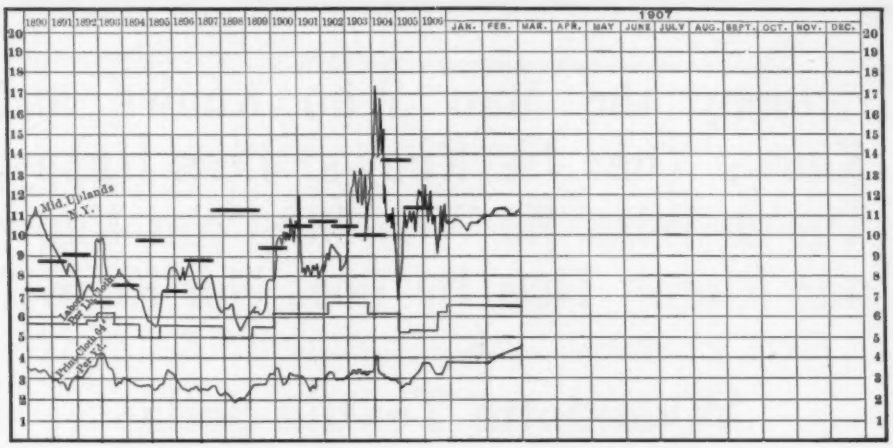
1890 1891 1892 1893 1894 1895 1896 1897 1898 1899 1900 1901 1902 1903 1904 1905 1906
1907
JAN. FEB. MAR. APR. MAY JUNE JULY AUG. SEPT. OCT. NOV. DEC.
Mid. Uplands N.Y.
Liverpool Low Middling
Spot Cotton 64 Exchange

The short, heavy, horizontal lines indicate the size of the cotton crops in millions of bales.
CHART SHOWING RANGE IN THE PRICE OF COTTON TO DATE.

The Cotton Market.

The movement of cotton into sight has been on record scale during the last month and the total in sight is now more than 1,300,000 bales in excess of the largest previous amount in the history of cotton production. In spite of this extraordinary situation the demands from domestic as well as foreign manufacturers have maintained prices and the month closes at a satisfactory advance.

The splendid position enjoyed by manufacturers of cotton goods all over the world and a consumption limited only by the available operatives to run the machinery is undoubtedly responsible for the firmness and slight advance in price.

The predictions that the movement into sight must show a large decrease have been unfounded. On account of the average low grade of the crop, competition is keenest for the higher grades and there is not so much haste in covering requirements on the lower grades. More total crop estimates higher than thirteen million bales are heard than lower figures.

The movement into sight since September 1 is estimated by the Chronicle as 10,581,089 bales, as compared with 8,472,743 bales in 1906; 9,262,864 bales in 1905; 8,577,559 bales in 1904; 8,747,317 bales in 1903; and 8,624,385 bales in 1902.

Georgia, La Grange. The Dixie Cotton Mills are to erect a new addition, 53 by 80 feet, in which considerable new machinery, including slashers and drawing apparatus, will be installed.

North Carolina, Pilot Mountain. The Marion Warehouse has been purchased by F. H. Chamberlain, of Winston-Salem, who will remodel and equip the building as a cotton mill. It is expected to begin operations about July 1st with about 100 people.

Rhode Island, Valley Falls. The Waypoyset Mills, capitalized at $50,000, have leased quarters in the Naushon Co.'s mill and are manufacturing silk and cotton fabrics, with equipment of 100 looms. This plant was formerly known as the Hays Textile Co., with post office address, Pawtucket. Product is sold direct.

WONALANCET COMPANY
NASHUA JUNCTION, N. H.
Manufacturers of a superior grade of
CARDED COTTON
Gulf and Peruvian—in the white
To Meet the Most Exacting Needs of
WOOLEN MILLS

WEIMAR BROS.
MANUFACTURERS OF
Cotton Mercerized Tapes,
SPOOL TAPES, BINDINGS AND NARROW FABRICS FOR UNDERWEAR AND OTHER TRADES.
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"Happy the Man Who Knows and Knows That He Knows; Less Happy, Tho'gh Wise, He Who Does Not Know and Knows That He Does Not Know."

Those qualities which enables

Wyandotte Textile Soda

to produce unusually desirable results for one mill will also enable it to repeat these successes in other mills.

There are a number of mills who are quietly reaping benefits afforded them by Wyandotte Textile Soda. Then there are many others to whom the good qualities of Wyandotte Textile Soda are unknown. The latter mills realize that some of their competitors are getting a little better finish, a brighter, cleaner color, etc. The difference is just enough, other things being equal, to give the competitor the business.

None Genuine except with a card bearing this Trade Mark

In Every Package.

Why this advantage? Mr. Mill Man, you are your own worst enemy. Don't drag along and think luck against you, but investigate the facts for yourself. We do not ask you to accept our word alone for the truth of these statements, but we do say to you that we will gladly have one of our expert demonstrators visit your mill and show you.

If he cannot satisfy you of the superiority of Wyandotte Textile Soda the demonstration will cost you nothing. If he does show you you will be more anxious to use it than we are to have you. Be one of those who know that they know.

The J. B. Ford Co., Sole Mfrs, Wyandotte, Mich.

THIS SODA HAS BEEN AWARDED THE HIGHEST PRIZE WHEREVER EXHIBITED.

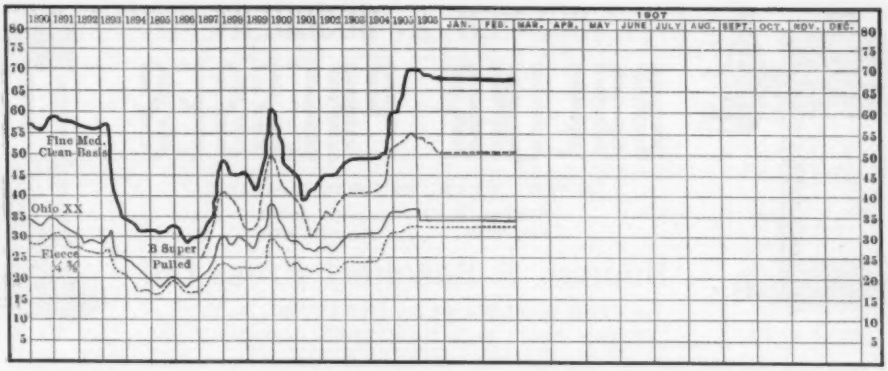

CHART SHOWING RANGES IN THE PRICE OF WOOL TO DATE.

The Wool Market.

With the favorable outlook in the goods market, the probability of a better demand for woolen as well as worsted fabrics, the increased needs of the knitters, and withal, no prospect of any marked increase in source of supply, the owners of wool are not worrying. In the latter part of February and early in this month many mills were on the market buying for immediate requirements, and covering future needs with a feeling of confidence that present purchases will show no loss.

There has been more activity in fleece wool than for some time, and a large movement in fine medium and territory and Australian. Any change in prices is much more likely to be upward than down.

News from the West indicates that the growers' selling combination is not likely to have much effect. In the event of falling prices it might endeavor to sustain them, but with a strong demand from the East there seems to be little occasion for artificial support.

On the other hand there seems to be no disposition to contract ahead for the clip at exorbitant prices. The early Arizona clip is moving at former prices, the clean cost figuring about 62 cents. The early news from the West that there had been an unprecedented loss of sheep through the severity of the winter seems to be unfounded.

One feature of the past month has been the arrival of large shipments of Australian wool, almost all of which is for manufacturers' account on orders.

TRADE IS DEMANDING NON-SHRINKABLE WOOL

BECAUSE THE

FOR WOOL
Never-shrink
Treatment

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IS WORKING A REVOLUTION

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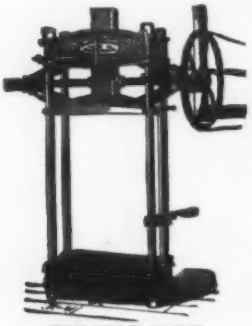

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BALING PRESSES

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Hydraulic or Knuckle Joint
Any Size .. Any Power

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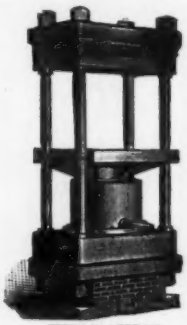

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Handles heavy cases in a Time-Saving Way—The Economy Steel Tiering Machine

Goods are put in place with ease and economy. The largest amount of stock can be stored in the smallest possible space and yet be instantly accessible. In use in representative mills. Investigate its merits and 'twill be in use in yours. Write for prices.

Economy Engineering Co.

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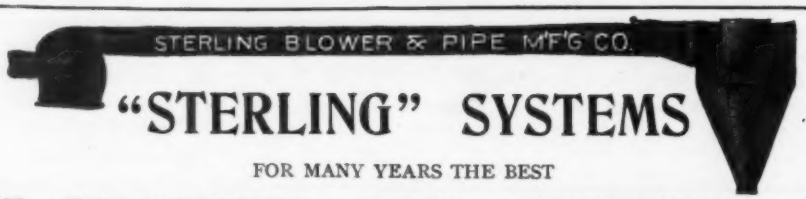

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Pop Safety Valves
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CROSBY STEAM GAGE AND VALVE CO.

Stores:
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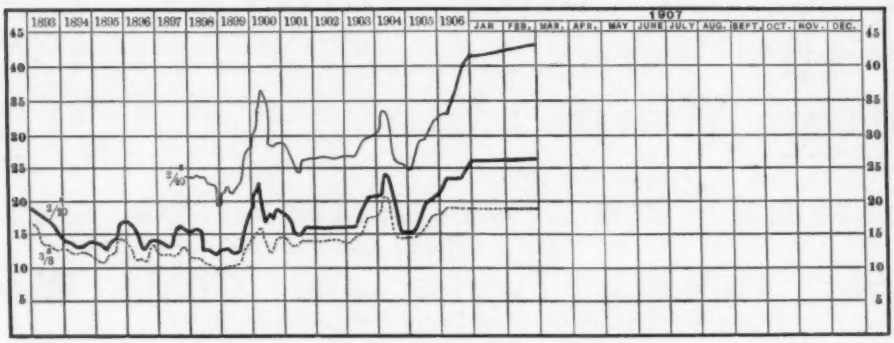
Yarn Department.



GRAPHIC CHART SHOWING RANGE OF PRICE OF COTTON YARN TO DATE.

The Eastern Cotton Yarn Market.

Cotton spinners are not seeking buyers and buyers have been holding off as far as their requirements permitted, hoping for some change in the situation in their favor. The result has been a comparatively quiet sales market, but deliveries are proceeding to the limit of the spinners' capacity, and in fine combed yarns especially the buyers for immediate requirements find it difficult to supply their wants.

Prices are firm although there is some variation up and down according to the needs of the buyer; there has been more or less evening up and reselling, particularly in the coarser counts, and in such cases concessions are reported. Some yarn spinners feel that any further advance in prices might curtail consumption and would certainly lead to importations if the conditions in foreign markets would permit.

The demand for Egyptian and Sea Island yarns is very keen and limited only by the available supply. It is a condition of great strength all round, even in the face of occasional weak spots.

Eastern Cops.

6s	20½
8s	20¾
10s	21¼
14s	22¼
16s	22¾
18s	23¼
20s	24
22s	25
24s	26
26s	28
30s	30
34s	33
36s	36
40s	38

On cones, ¾c. more up to 14s; 1c. more from 15s to 22s; 1½c. from 23s to 35s, and 2c. above that.

Eastern Two-Ply Skeins, Carded Peeler.

12s	24
14s	24½
18s	26½
20s	28
24s	31
26s	32
30s	35
36s	40
40s	45
45s	48
50s	55
55s	59
60s	64

Eastern Two-Ply Warps, Carded Peeler.

2/30s	36
2/36s	41
2/40s	46
2/45s	49
2/50s	56
2/60s	65

Egyptian Weaving Yarns. Single Skeins Combed.

30s	41
36s	43
40s	46
45s	50
50s	55
55s	60
60s	65
70s	70

THE J. R. MONTGOMERY CO.,

Windsor Locks, Conn.

MANUFACTURERS OF

Mercerized Cotton Yarns Gives the High Silk-Like Lustre in Knit Goods and Woven Fabrics.

Novelty Yarns Boucle, Bourette and Spirals, in Cotton, Wool, Worsted, Mohair and Silk.

Cotton Warps on Beams, Jack Spools and Tubes. In Fancy, Twist, Colors and Printed.

GREENE & DANIELS MFG. CO.,

COMBED, CARDED AND GASSED

Yarns, Threads, Twines and Chain Warps.

DYE SULPHUR BLACKS DIRECT IN COPS, CONES OR TUBES.

Colored and Bleached Yarns Furnished in any manner desired by the trade.

Pawtucket, R. I.

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Manufacturers of
White, Colored, Fancy
and Double Twist

COTTON WARPS

HOUSATONIC, MASS.

4s to 60s.

Dana Warp Mills

WESTBROOK, ... MAINE

White and Colored
Warps 6s to 50s Single and Ply
Mule Cops
From 30s to 50s from
American & Egyptian Cotton

The Philadelphia Market.

The yarn market during the last few months has maintained its strong position. The volume of business continues good and most spinners are sold ahead to their entire capacity, for from two to four months. Fine two ply yarns are as scarce as they have been at any time during the winter. On coarser numbers, in ply yarn, the situation is a little easier, and fairly prompt deliveries can be secured.

There has been some tendency to price cutting, but it has been only a fractional part of a cent, and in a good many instances represents a cut in commission, rather than a concession by the spinner. The demand continues good, and we do not look for any decided change in the market in the near future.

Southern frame spun cones:—

7s and coarser	20
8s and 9s	20
10s	20½-21
12s	21-21½
14s	22
16s	22½
18s	23½-24
20s	24½-25
22s	25½
24s	26-27
26s	28
30s	30-31
40s	41
50s	52

Southern high grade mule yarn:—
Cones.

10s	22
12s	22½
14s	23-23½
16s	24-24½
18s	25-25½
20s and 22s	26-26½
24s	27½

Southern frame yarn, lower grades:—

6s and 8s	19¾
10s	20

Eastern cones (high grade quality):—

10s	23
12s	23½
14s	24
16s	24¾
18s	25½
20s and 22s	26½-27½

Skein yarn (mostly Southern):—

4s and 8s soft	19½
10s to 12s	20-21
14s to 20s	21-24
22s	24
14/2	21½-22
16/2	22½-23

JAMES E. MITCHELL CO., COMMISSION MERCHANTS.
Cotton Yarns
AND COTTON CLOTHS.
122-124 Chestnut Street, PHILADELPHIA, PA.
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206 Chestnut Street, PHILADELPHIA.
605 Medinah Temple, CHICAGO.

Harding, Whitman & Co.,
Dry Goods Commission Merchants,
COTTON AND WORSTED YARNS.
BOSTON. NEW YORK. PHILA.
CHICAGO. BALTIMORE. ST. LOUIS.

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COMMISSION MERCHANTS
DEP'T. FRED'K VIETOR & ACHELIS
COTTON YARNS
66-72 LEONARD STREET - - NEW YORK

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TOLAR & HART
Cotton Yarns and Cotton
TEXTILE BUILDING
Members of New York Cotton Exchange
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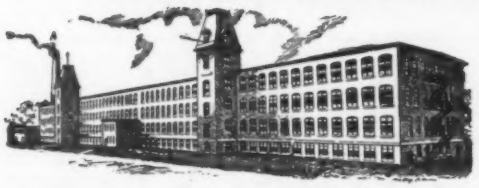
530 Broadway, - NEW YORK.
MERCERIZED TURKEY RED GASSED } COTTON YARNS.

E. D. LORIMER & CO.
COTTON YARNS
MERCERIZED YARNS } ALL NUMBERS FOR ALL PURPOSES
346 BROADWAY, NEW YORK.

LUDWIG LITTAUER,
Successor to MOELLER & LITTAUER.
SILK, WORSTED, WOOLEN YARNS COTTON AND MOHAIR
Polished Threads and Tinsel. Artificial or Wood Silk.
Mercerized, Turkey Red, Fine Gassed Yarns.
109 GREENE ST., NEW YORK.

C. T. Crocker, Pres. W. F. Stiles, Treas.

ORSWELL MILLS



Fitchburg, Mass.

Capacity, 45,000 Spindles.

HIGH GRADE YARNS

From Egyptian and Peeler Cottons, Carded or Combed, in Chains and Skeins, on Balls, Beams, Spools, Cops, Cones, Tubes, Single or Twisted.

JENCKES SPINNING CO.

Main Office and Mills at Pawtucket, Rhode Island.

Carded and Combed Cotton Yarns for Weavers and Knitters.

Double and Twist Yarns for Woolen Trade.

Philadelphia Office, Mariner and Merchant Building, Third and Chestnut Streets.

Wm. Chalmers & Co.

(Incorporated)

Imported and Domestic Cotton Yarns.

Turkey Red Yarns a specialty.

Correspondence solicited.

43 Leonard St. - - NEW YORK.

GRANT YARN CO.,

COMBED AND CARDED COTTON.

YARNS 40's and above. AND

FITCHBURG, MASS. **WARPS**

Reels for Cotton WOOLEN AND WORSTED

Patented Hosiery Winders, Cop Winders and Spoolers.

LINDSAY, HYDE & CO.,

3124 to 3130 East York St., PHILADELPHIA, PA.

Ballou Yarn Co.

PROVIDENCE. R. I.

Harness and Seine Twines and other Job Gassing, Winding, etc. All Numbers

GASSED YARN SPECIALTIES

Wiscasset Mills Co. | Patterson Manfg. Co.
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HIGH GRADE HOSIERY YARN

White and Colors. All Numbers.

Sewing Twines on Cones and Tubes.

SPECIALTIES IN WEAVING YARN.

Black and white. Double and twist for woolen trade.

CANNON MILLS, 55 Leonard St New York.

C. MOORE & CO.,

Manufacturers of

TWINES, THREADS AND YARNS

Jacquard Harness Twines of all kinds on hand and made to order.

S. W. Cor. Fifth and Market Sts., Phila.

THE RAVINE MILLS CO.

MANUFACTURERS OF

COTTON WARPS

In White and Colors on Beams and Jackspools

Specialty of Fast Black Twist on Jackspools.

VERNON, CONN.

Indian Orchard Company

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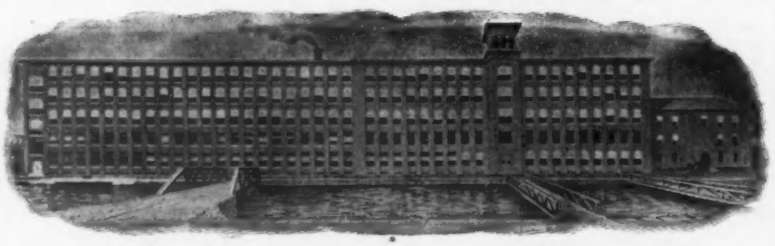

E. Morgan, Pres.
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W. C. Godfrey, Ag't.

Carded and Colored Cotton, For Mixing with wool, Machined or in Roving.

Cotton Warps and Yarns, In Gray and all colors, single or two or more Ply, and Cable Cord.

Novelty Yarns In various Patterns Colors and Twists.

20/2	26-26½
30/2	32
40/2	43
16/3 slack	22
12/3 slack	21
8/3 carpet	19
8/3 slack	19
9/4 slack	19

Warps (Southern):—

10s to 12s	20½-21
14s	21½
16s	22-22½
20s to 22s	23½-24
26s	27
14/2	23
16/2	24
20/2	26-27
24/2	29
30/2	33
40/2	44

Mixed colored yarns (mock twist, half colors):—

6s to 10s	20½-22
12s to 14s	22½-23
16s to 18s	24-25

Mock Egyptian, 2c. advance over white.

Egyptian, 7 to 8c. above best quality white.

Worsted Yarn.

Spinners continue busy on yarn for light weight orders. Some spinning instructions have been given for yarn ordered for heavy weights, but generally speaking spinning specifications are coming forward slowly. The spinners have many orders booked and would like instructions which would keep them all more than busy, but not withstanding the slow deliveries, spinners are serene, and the prices at which yarn has been sold could not be duplicated. In fact with new business which must come within the next 60 days, prices for yarn will have a tendency to advance 2 or 3 cents per pound.

Spinners, when approached by buyers, while willing to take orders at present at latest quotations, state that this wool situation points strongly to higher prices.

The spinners of fancy mixed yarn are not getting as many orders as they secured during the light weight season, because the demand for the heavy weight orders is all for straight white yarn in 3/8 blood quality from 2/16s to 2/26s.

The weavers at present are mostly making light weight cloth and these orders will not be run out

Established 1863 *Incorporated 1893*

W. Warren Thread Works

Makers of High Grade

SPOOL COTTON

of every description for the manufacturing trades

Mills: Westfield, Mass.

LINEN YARN IMPORTER.

HUGHES FAWCETT, 115 Franklin Street, NEW YORK.

Flax, Hemp and Jute Line and Tow Yarns,
For Weaving Purposes.
Linen Jacquard Harness Twines,
Fine Cotton Harness and Heddle Twines,
For Cotton, Silk, Woolen and Carpet Manufacturers.
Correspondence solicited. Samples promptly furnished.

Mercerized and Plain
Skein, Warps,
Cones, Cops,
Tubes
COTTON YARNS
426 and 428
Market St., Phila.
Theo. H. Strouse & Co.

Box Shook
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Lumber
THE CONNECTICUT BOX CO.
New Haven, Conn.

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206 West Broadway, New York, N. Y.
WOOL, SILK, MOHAIR, CAMEL HAIR, RAMIE.
Ramie Tops, Ramie Noils, Silk Tops, Silk Noils,
Ramie Yarns, Silk Yarns, Silk Noil Yarns.
Prepared Tussah Silk for Woolen Manufacturers, ready for immediate use on regular woolen machinery.

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The Merwin Paper Company
Hartford, Conn.
Press Papers and Fender Boards
Correspondence Solicited
Mills at Rainbow, Conn. **Address Inquiries to Rainbow, Conn.**

Pocasset Worsted Company,

WORSTED YARNS

IN THE GRAY.

Mills at
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Office
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French System. Bradford System.

B. F. BOYER CO.,

MANUFACTURERS OF

WORSTED AND WOOLEN YARNS,

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Woolen and Merino YARNS

Eaton Rapids Woolen Mills,

EATON RAPIDS, MICH.

EDDY & STREET,

Cotton, Woolen

Yarns and Braids

Worsted, Spun Silk.

PROVIDENCE, R. I.

WORSTED YARNS

RICHARD CAMPION.

SELLING AGENT FOR

Bristol Worsted Mills,

Highland Worsted Mills.

300 Chestnut Street,

PHILADELPHIA, PA.

THE MALCOLM MILLS CO.,

MANUFACTURERS OF

FANCY YARNS and POLISHED THREADS.

Offices: 229 Chestnut St., Philadelphia.

Mills: Frankford, Pa.

KROUT & FITE MANUFACTURING CO.,

Manufacturers of

Silk, Cotton and Mercerized Narrow Fabrics

Spool Tapes a Specialty.

Telephone Connection. Office and Mill, Allegheny Ave. and Emerald St., PHILADELPHIA

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SUMMER STREET.

ANDREW J. SOLIS, Jr. & CO.

HOFFMAN, DeWITT & McDONOUGH CO.,

Diamond Stay Bindings

TRADE MARK

Manufacturers of

Tapes, Webbing and Bindings.

COTTMAN and G STS., PHILADELPHIA

Ryer's Station, P. & R. R. R.

Bell Telephone, 293 Cheltenham.

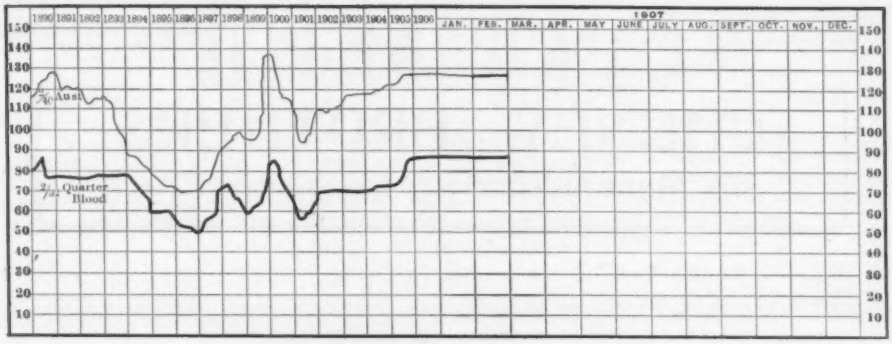


CHART SHOWING RANGES OF PRICE OF WORSTED YARNS.

until April and one order was taken not long ago for delivery in May. Some of the buyers will not look at heavy weight samples because the light weight orders have not been delivered. The heavy weight orders so far received are largely sample piece orders. Manufacturers cannot do business that way, because by the time the orders for a quantity are given, and the yarn secured to fill these orders, and the goods made will take until September and then it is too late for buyers and they won't take the deliveries. The result of all this delay will be that the heavy weight business will collide with the next light business and a bad state of affairs may result. As it is, very few of the weavers have started to make the heavy weight goods ordered and buyers of the sample pieces are urging their delivery.

Many of the weavers have orders enough booked to give spinners instructions to start on their heavy weight yarns, but as they are still making light weight cloth are letting the spinners carry the yarn as long as possible, so that they will not have to pay for it until their light weight business is out of the way. There seems to have been some queer business tactics pursued this season. Some mills in order to run full on heavy weights have taken some of their orders below cost. We hear of one instance of this kind where two mills were competing for the same business. One mill had a special yarn made at a much lower cost than the competing mill by 8 or 9 cents per pound, and yet the mill which paid the highest price for the yarn sold the cloth 7 or 8 cents per yard cheaper than the mill with the lowest price yarn. The fair conclusion is that the mill which got the business took it at a loss to run several hundred looms on full time. One thing is certain and that is that the business is going to be more evenly distributed the coming season.

All worsted fancy serges and mercerized worsteds are the best sellers. Almost all the heavy weight cloth is now made 18 oz. against 22 oz. in the past. Many more orders for worsted yarn will be placed between March 15 and April 15. All the weavers fear a still further advance in yarn and say that they can get no advance for cloth and if the price of yarn advances again they will have to change the style of yarn used in their fabrics.

The knitters continue busy on yarn placed in November and have as much business as they have yarn bought to fill. The hosiery manufacturers have purchased largely French spun made with a large percentage of cotton. The dress goods manufacturers continue to use large quantities of cotton for warp and much French spun yarn in grey mixes in filling in 1/24s.

The outlook is good and much will develop between now and April 1st. It is believed that we are to have a good heavy weight business.

We quote:

2/40s Australian	1.28
2/40s Delaine	1.23
2/36s 1/4 to 3/8 Blood	95 to 1.00
2/32s 1/4 Blood	85-87½
2/20s 1/4 Blood	82-85

Woolen Yarn.

Spinners of woolen yarn are beginning to get many orders for sale yarn and some mills are trying to employ extra help so that they can run nights. There is very little commission spinning being secured. Most of the spinners are selling the yarn outright. The business is coming from many directions and largely from new customers.

The weavers of men's wear worsteds are using much woolen spun in connection with worsted to lower the cost of their fabrics. This yarn is being used mostly in warps, either straight or twisted, with a cotton thread. The hosiery knitters have taken advantage of the present slowness of the wool market and have more orders covered for yarn. Some underwear knitters have bought more

CHENEY BROTHERS

Silk Manufacturers. So. Manchester, Conn.

Trams, Organzine and Spun Silks in the hank, or on spools and cones for woolen manufacturers.

Silks for electrical uses, insulation and special purposes made to order.

Knitting Silks, Ribbons and Piece Goods for Trimming Knit Goods.

Dress Silks, Satins, Linings, Printed Pongees, Foulards and Decorative Silks; Upholstery Goods, Ribbons, Sashes, Plushes and Velvets.

WILLIAM RYLE & CO.,

Foreign and Domestic

Spun Silk Yarns and Noils.

Domestic Thrown Silk of every description. Fine Pure Dye Silks for the woolen trade a specialty. Importers of European and Asiatic Raw Silk.

54 Howard St., cor. Mercer St., **NEW YORK.**

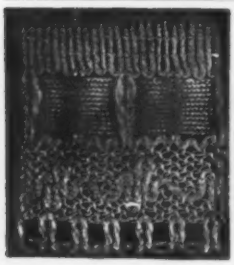
SAUQUOIT SILK MFG. CO.,

INSULATING AND BRAIDING SILKS.

ORGANZINE, TRAM & HOSIERY SILKS.

Fast Dye Organzines for Woolen Manufacturers a Specialty.

Mills: Bethlehem, Pa., Phila., Pa., Scranton, Pa. New York Representatives, Wm. Ryle & Co., 54 Howard St.— Phila. Office, 4015 Clarissa St., Nicetown.— Chicago Office, 210 Monroe St.—Boston Office, 78 Chauncy St.



GEORGE W. CHAPIN,

BRAIDS Cotton, Worsted, Mercerized, Cotton and Silk Twilled. **TAPES** Common, Twilled, Superfine and Plain 12 to 32s, white and colors on spools.

YARNS Cops, Skeins, Warps, Tubes and Cones. **THREADS** on Spools, Tubes, Cones, Unbleached, Bleached and Colors for Manufacturers' use.

CROCHET LACE EDGINGS Latest Styles in Point Laces.

229 Church Street 231 . . PHILADELPHIA

NON-FLUID OILS

The Cost of Lubrication is the cost of lubricants *plus the cost of power wasted in overcoming friction.*

The most economical lubricant is that which best reduces friction—not that which lasts the longest. Oils reduce friction but drip and spatter and damage goods. Grease is not wasted but it increases friction because of its heavier "body." **Non-Fluid Oils** do not not drip, do not waste and *do* reduce friction. We can prove this to your satisfaction. Send for *free* samples and test these truly economical lubricants. Write also for a copy of our new booklet on modern lubrication.

ORIGINATORS AND SOLE MANUFACTURERS OF NON-FLUID OILS.

New York & New Jersey Lubricant Co., Dept. H, 14-16 Church St., New York City.

or less outside yarn and the dress goods manufacturers are placing many orders for 7 run yarn out of which to make the plaid broadcloths so largely in demand. The knitters of fancy woolen yarn in colors are busy and are placing orders for 2 and 3 ply yarn in good amounts for delivery in April.

It has been two years since the rubber boot lining trade has amounted to much, but the present quietness will be broken by May 1st and some good orders for yarn will be placed. The present winter has reduced stocks much and buyers are ready to place further orders.

Some spinners are not doing as well as others and it is largely on account of the loss of their regular customers. The custom spinners have suffered the most in this respect and it only goes to show the folly of giving one concern too much machinery in good times, because when lines change and they no longer need the machinery, the spinner must seek new business at a time when the other spinners are doing all possible to hold onto their own orders. The closing down of a mill for lack of orders in these times is a serious matter, because the demand for help is so great that operatives seek other employment and when the spinner has an opportunity to start his machinery he has lost his organization.

Undoubtedly matters will come out well enough in the end, but there has got to be much shifting of orders and securing new customers and conducting business differently than in the last three or four years. The knitters of woolen underwear have all secured a good business and enough to last until next year. Some of the makers of fine underwear, while using the same class of stock,

G. M. BLAISDELL, Pres. and Treas. G. A. BLAISDELL, Vice-Pres. and Sec'y.

Established 1880—Incorporated 1893.

THE S. BLAISDELL, JR., CO.,

COTTON, EGYPTIAN PERUVIAN

American Long Staple a Specialty. Shipments direct to mill from Egypt, Peru and all American Southern Points.

CHICOPEE, MASS.

Cotton Waste Purchased on Yearly Contract from Mills.

WILLIAM B. CHARLES,

Cotton Yarns, Cotton Cloth, Silesia, Sateens,

For the Underwear Trade.

AMSTERDAM, N. Y.

Boston Office, 200 Summer St.

EDWIN F. SCHOFIELD

ALL GRADES

PULLED AND FLEECE WOOLS

FOREIGN NOILS, CARPET WOOLS.

COTTON WASTE

New York Office 256 Church Street

Mariner and Merchant Building,

3d and Chestnut Streets, Philadelphia, Pa.

JOSEPH M. ADAMS CO.

WOOLEN YARNS,

Carpet Backing and Rug Yarns a Specialty.

ARCOLA MILLS,

Main St., foot of Centre St., Manayunk, Philadelphia.

Knitting and Weaving

YARNS.

Cones, Cops, Warps, Skeins,

Single, Double, Three-Ply, etc.

Peeler, Egyptian, Mixed Colors.

Large Assortment.

EDWARD S. HYDE,

226 CHESTNUT STREET,

Philadelphia, Pa.

The roof of the Guaranty Loan Building in Minneapolis is used as an observatory. Nearly 100,000 visitors walk over it every year. It was roofed in 1889 with coal-tar pitch, felt and gravel, laid along the lines of *The Barrett Specification*. It has had no protection such as tile or boarding against the wear of foot traffic, visitors being allowed to walk freely on the gravel. The original cost of the roof was only $868, and the cost of maintenance to date has been $79.20. Cost per square foot per year of service, $0.0027. Although eighteen years old the roof is in excellent condition and will probably last for many years more.

We have many such examples to cite of the service given by *Barrett Specification* roofs. Usage is not generally as severe as in the above instance. Under normal conditions a *Barrett Specification* roof will be guaranteed by any contractor for ten years, and usually gives faultless service for over twenty years. There are many cases where they have been in service *over thirty-five years* without leaking or requiring a cent's worth of repairs or attention.

Pitch and Felt are the natural materials with which to make a roof. If they are used according to *The Barrett Specification*, satisfaction is absolutely certain, and *the cost per year of service will be lower than any other kind of roofing.*

Illustrated Booklet covering the roofing subject thoroughly mailed free on request to nearest office.

BARRETT MANUFACTURING COMPANY

New York, Chicago, Philadelphia, Cincinnati, Minneapolis, Cleveland, Kansas City, Boston, New Orleans, St. Louis, Allegheny.

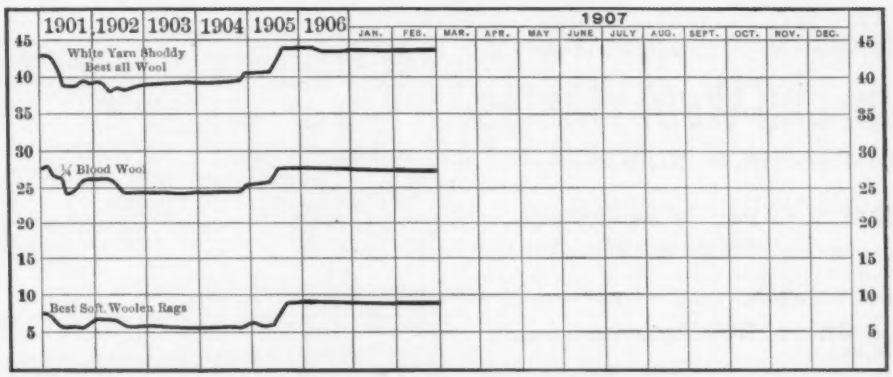


CHART SHOWING RANGE OF PRICES OF SHODDY, RAGS AND NOIL.

are keeping prices the same by reducing the amount of wool used in the garment.

There is going to be an increased use of Australian lamb's wool this year. Probably three times more will be used this year than was the case last season. Prices are holding very firm at 80 to 82 cents Some talk of 85 cents per pound. Wastes of all kinds are very scarce; of domestic, there is scarcely any and much fine Australian thread is being imported at 68 1/2 to 72 cents per pound.

The Rag and Shoddy Market.

When manufacturers of woolen goods know what their requirements in the way of raw material will be for the coming season the uncertainty which hangs over this market will be in some degree removed. Dealers have been anticipating a brisk demand at increased prices in various lines, but it has not yet materialized.

A good steady volume of business has been reported in diversified lines. There is a strong demand for the finer qualities of all kinds of waste. The rag market shares in the halting tendency of the shoddy business, but stocks are firmly held, although in good supply. Mills are buying what they want when they want it, and in some cases are showing urgent need, especially for small lots. The dealers feel that the orders are of the hand-to-mouth variety and business would not be stimulated by cutting prices.

We quote as follows:

SHODDIES AND EXTRACTS.

White yarn, best all wool	45
White knit, all wool, best fine	35-40
White knit, No. 2	28-30
Light yarn, extra fine	25-28
New pure indigo blue	28-30
Merino.	
Fine light, all wool	26-28
Medium light, all wool	18-20
Fine black, all wool	26-28
Fine dark, all wool, best grade	22-25
Medium dark, all wool, No. 2	15-17
Red knit stock, strictly all wool	22-24
Red flannel, all wool	22-24
Dark blue for hosiery, strictly all wool, No. 1	
Dark blue for hosiery, not all wool, No. 2,	16-18

WOOLEN RAGS.

Fine merchant tailors	10-11
Choice light colors	13-14
Browns	12-13
Blacks	9½-10
Fine blues, plain	9-10
Fine dark	11-12½
Medium dark	7-8
Worsteds.	
Blue	16-18
Black	21-23
Serges.	
New black	16-18
New blue	15-17
Flannels.	
New scarlet	18-19
New blue	15-16
Cloakings	3-3½

SOFTS AND KNIT STOCK.

Soft woolens, best	9-9¾
Old white flannels	18-19
White flannels, No. 2	11-12
Old red flannels	13½-14
Light blue flannels	7½-8½
Old blue flannels	6-7
Old plaids	7-8½
White stockings	24-25
White hood stock	24
Clear hoods	10-11
Blue stockings	9¾
Fancy stockings, No. 1	9½
Gray stockings	10½-11
Black stockings	11-12
Knit stock comforters	7-8
Red knit	12-12½
Light gray knit	9-10
New light fancies	10
New fancies	10¾-11¾
Merinos.	
Light, fine	14-15

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Fine, dark	14-15
Coarse, dark	6¾-7½
Blue	11-12
Black	13-14

FLOCKS.

Shear, fine white, all wool	9-11
Fine indigo blue, all wool	8-9
Fine black and blue, all wool	6½-7
Fine dark, all wool	4½-5
Gig, fine, all wool	1½-4
No. 1 black, all wool cut	6-8

COTTON WASTE.

No. 1 Spinners	9
No. 1 Machine Cop	8¼
No. 2 Machine Cop	6
No. 1 Cop	8¼
No. 1 Card	6½-7
No. 2 Card	5½
No. 1 Oily Card	4
No. 2 Oily Card	3
Peeler Combing	8½-9
Egyptian Combing	7½-8
No. 1 Linters	4½
No. 2 Linters	-4
Woven White Clips	6
Woven Colored Clips	2-2¼

Dyestuffs and Chemicals.

Acids.

Acetic, 100 lbs.	2.15-2.35
Citric, domestic	48-49
Oxalic	8-8½
Sulphuric, 60 deg., 100 lbs.	1.00-1.20
Muriatic, 18 deg.	1.10-1.75
Tartaric crystals	27¼-28¼

Miscellaneous Chemicals.

Acetate of lime, gray, 100 lbs.	2.50-2.55
Alum, lump	1.75-1.80
ground	1.85-1.90
powdered	3.00-4.00
Aqua ammonia, 16 deg.	3¾-4
Ammoniac, sal., gray	6-6½
Borax, bbls.	7½-8½
Brimstone, crude, foreign ton	22.50
Copperas	55-65
Cream tartar, crystals	22¼-22¾
Fuller's earth, lump, 100 lbs.	
powdered, 100 lbs.	80-85
Glauber's salt	55-60
Potash, chlorate, crystals	8¾-9¼
powdered	9-9½
carbonate	4-4½

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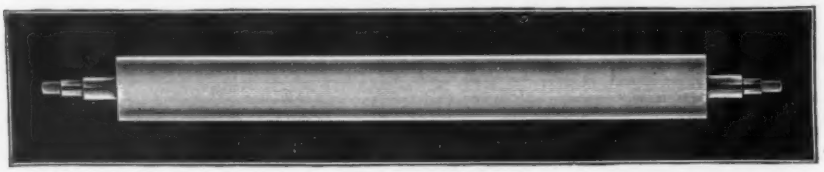

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LIABILITIES (Including Capital)	13,430,818
NET SURPLUS OVER ALL LIABILITIES	7,408,355
Surplus as regards Policy-holders	10,408,355
Losses Paid Since Organization Over	105,000,000

Note amount of net surplus after providing for all San Francisco losses.

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Soda, bicarbonate, English	
American	1.30-1.70
Soda, caustic, domestic, 60 per cent.	1.85-1.90
Sal. English	
Sal. American	70-80
Sulphate, alumina	1-1¼
Vitriol, blue	7¼-7¾

Dyestuffs.

Acetate of soda	4⅛-4½
Acid, picric, best crystals	22-28
tannic, commercial	34-38
Albumen, egg	55-75
blood	20-25
Alizarine, red	15½-16½
Aniline, oil	11½-12
salt crystals	9⅞-10¼
Antimony salt, 65 per cent.	24½-27
Bichromate of potash, American	8⅛-8½
Bichromate of soda	6⅛-6½
Bisulphite of soda	80-1⅜
Cutch, mat	4¼-6
boxes	4½-7
Dextrine, imported potato	5¾-7
corn	2.75-2.90
Divi-divi, ton	40.00-50.00
Flavine	23-40
Fustic, stick, ton	17.00-20.00
young root	45.00
Gambier	4-4⅛
Hypo. of soda, Am. bbls. cwt.	1.50-1.65
Indigo, Bengal, low grade	55-65
medium	62½-75
high grade	77½-90
Kurpahs	50-60
Gautemala	35-70
Manila	45-50
Madras	45-50
J. (Synthetic)	18-20
Indigotine	95-1.80
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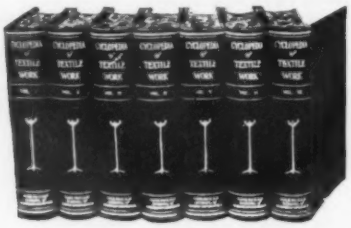
roots	16.00-19.00
Madder, Dutch	13½-15
Muriate of tin, 36 degrees	9-9¼
52 degrees	15-15¼
Nitrate of iron, commercial	1⅛-1½
Nutgalls, blue Aleppo	23-25
Persian berries	
Phosphate of soda	1.90-2¼
Prussiate of potash, yellow	16½-17
Quercitron, ton	20.00-22.00
Starch, corn, pearl, bbls.	2.35
corn, pearl, bags	2.20-2.40
potato	3¼-4
rice	6½-7
wheat	4¾-5¼
Stannate of soda	10-20
Sumac, Sicily, No. 1, ton	85.00-90.00
Sicily, No. 2, ton	85.00
Tapioca flour	2½-4
Tin crystals	25½-30
Turmeric, Madras	6½-7
Zinc dust	6-6½



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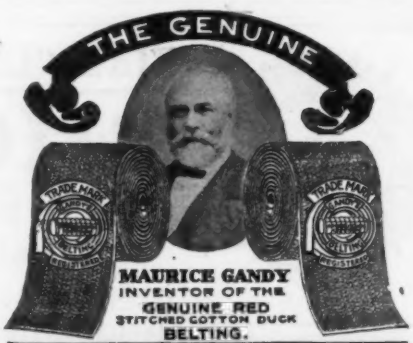

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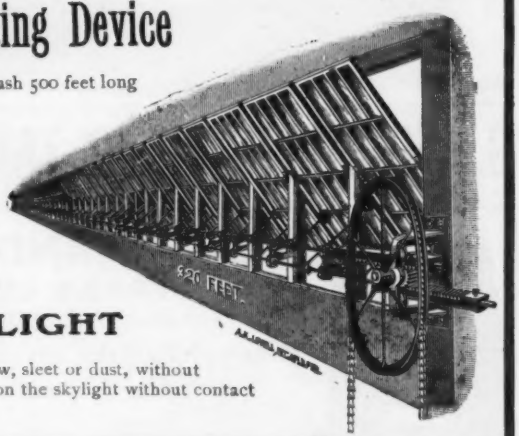

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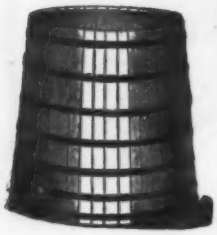

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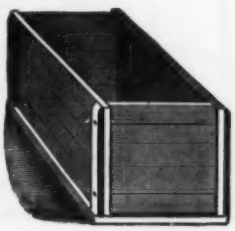

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CENTRIFUGAL

Dyeing Machine

U. S. Patent 776,295, Nov. 29, 1904.

Dyes Raw Stock
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DYES SULPHUR COLORS
without bronzing or streaking and leaves the stock in perfect condition for carding or weaving.

ONLY ONE HANDLING
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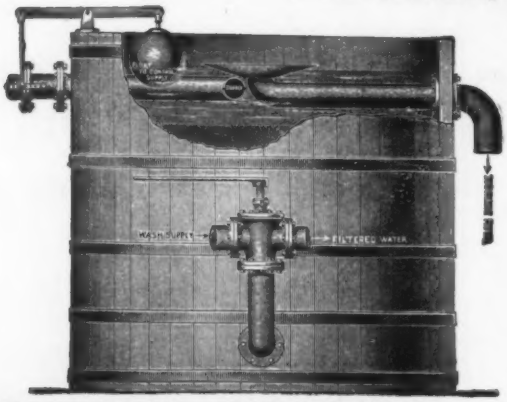

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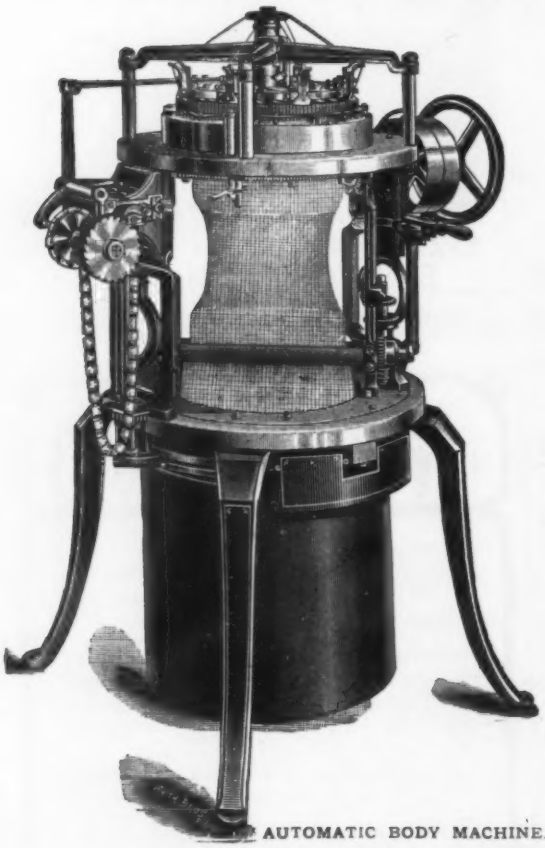

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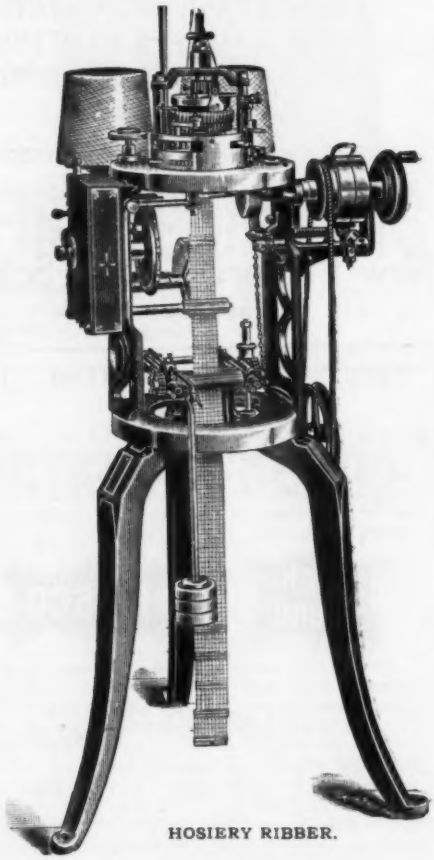

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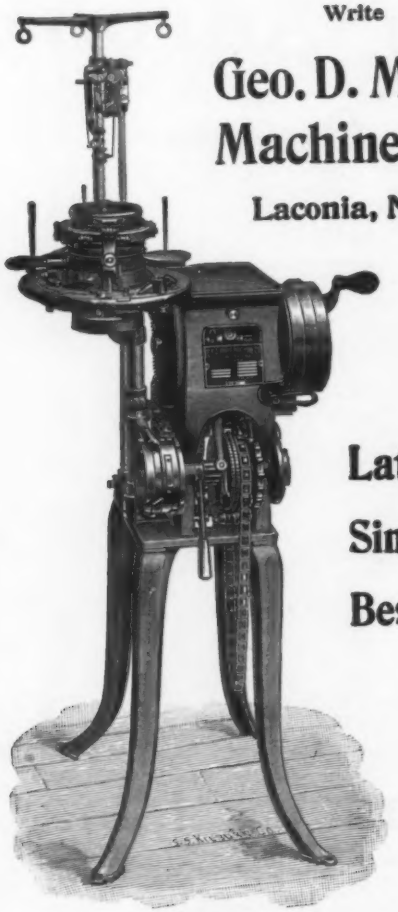

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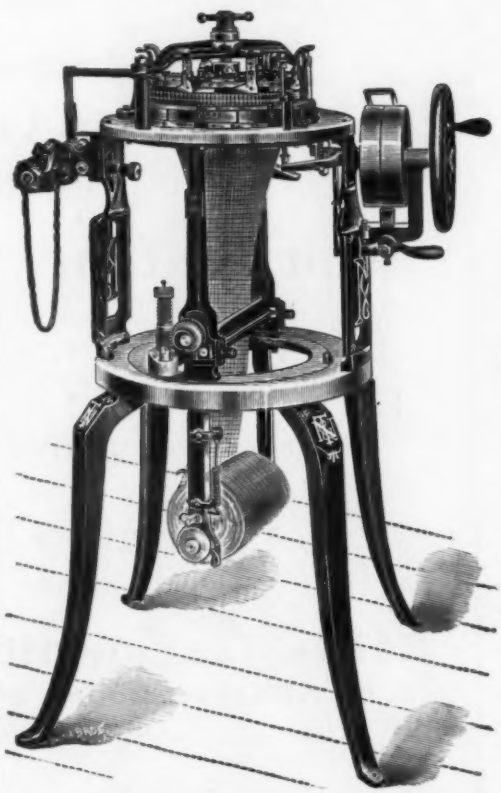

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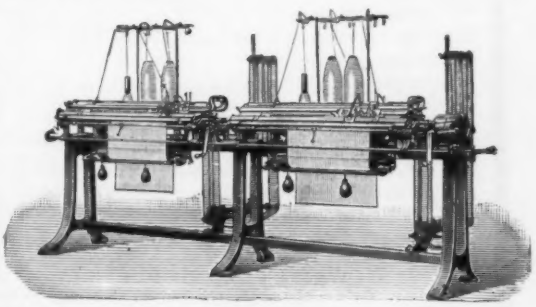

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(Trade Mark) (Pat. April 5, 1892)

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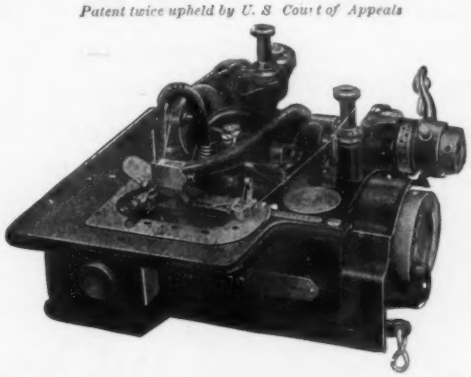

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FAST
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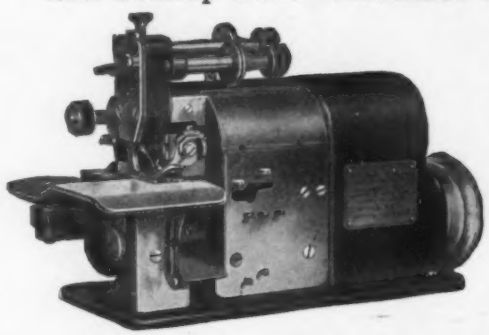

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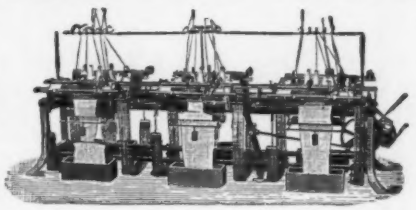

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For automatic production of **Full Fashioned Hosiery, Fine Half Hose, Ladies' Lace Hose, Fine Underwear**; high speed, large production. All guages and any number of sections, from 2 to 24.

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For Fancy Goods in largest variety, **Shawls, Capes, Caps, Borders, Fringes, Lace Work, etc.,** in silk, wool, cotton.

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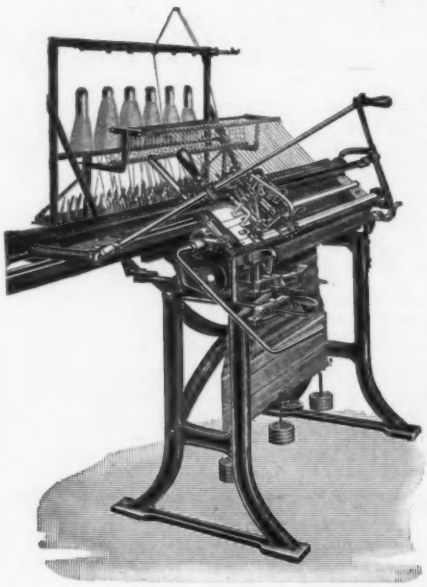

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for hand and power driving, of best quality and perfect construction.

Specialty: Jacquard Machines

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THE LARGEST PRODUCER OF PERFECT WORK.
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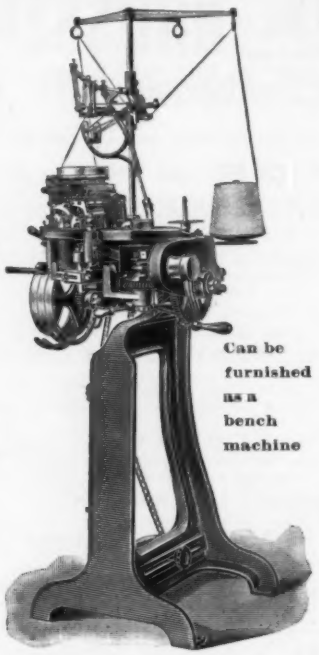
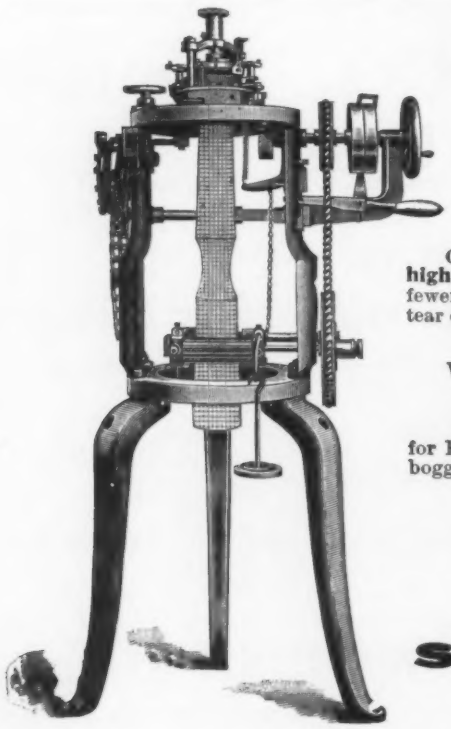


Can be furnished as a bench machine



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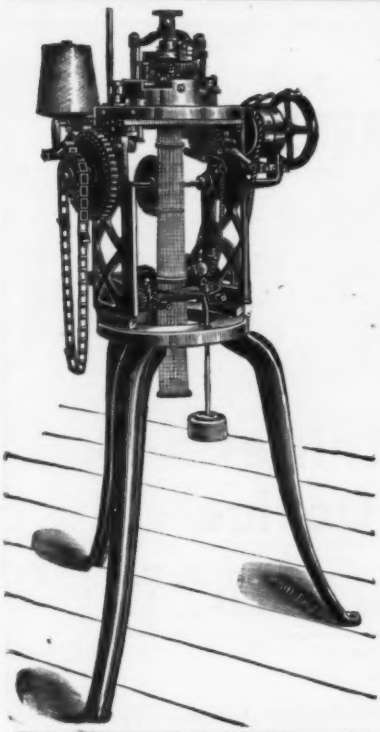

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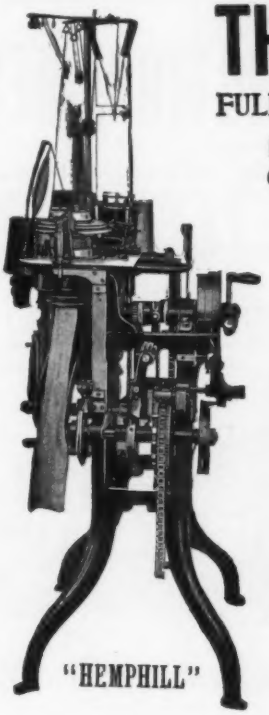

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FULLY AUTOMATIC HOSIERY KNITTERS

FOR MAKING ALL KINDS AND GAUGES OF SEAMLESS HOSIERY

One with **GEARS**, the other with **CHAIN** for pattern mechanism, to meet the various tastes of different manufacturers.

Both used and approved by leading hosiery manufacturers.

Both contain all the well-known essentials demanded of first-class knitting machines.

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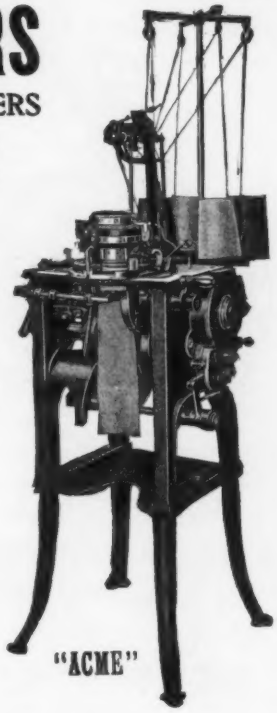

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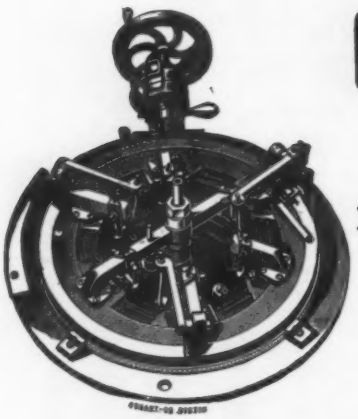
With or without **Transferring Device**

ALL SIZES AND GAUGES, 2 1-4 INCH TO 4 INCH



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Either plain or full automatic, with stop motions complete. 4 to 24 feeds for

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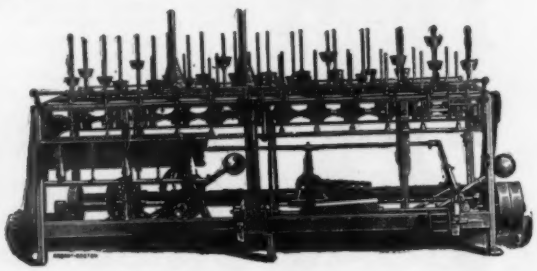
Automatic Racking and Striping Machines for Sweaters, Cardigans, Collarettes, Cuffs and Anklets.



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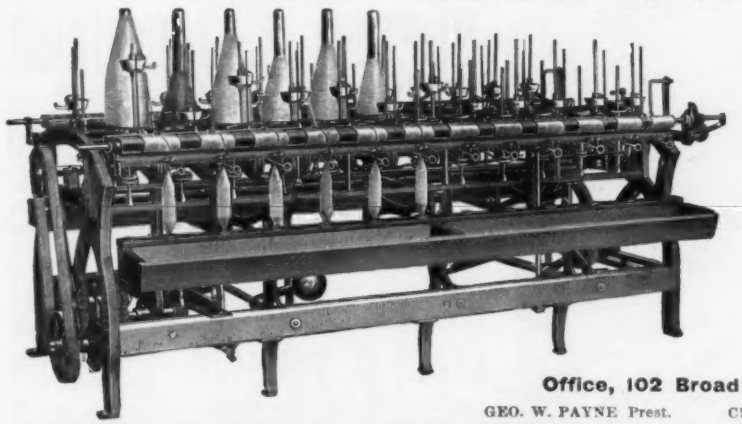

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Upright Spoolers,

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Doubling Spoolers for doubling 2, 3, or more ends into one.

Upright Quillers, Quill from Cop, Skein or Bobbin.

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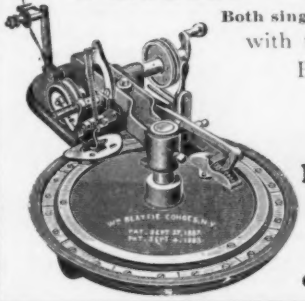
Both single and double Stitch.
with the
Patent Raised
or
Straight Points.



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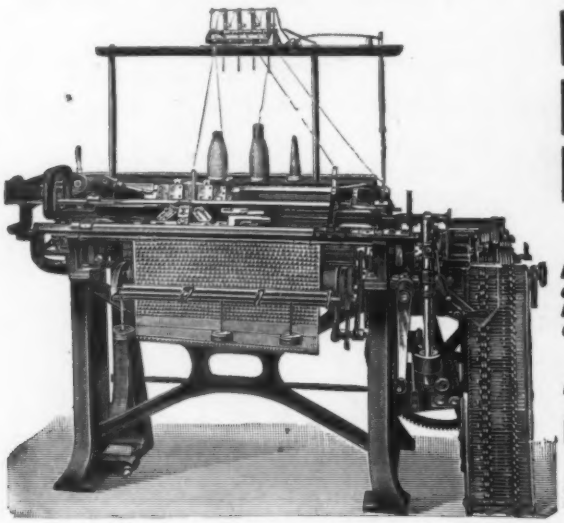
BRAIDING MACHINERY

ALL STYLES AND KINDS FOR FLAT AND ROUND BRAIDS.

SOLID SASH AND CURTAIN CORDS,

SHOE AND CORSET LACES, BANDING

AND ALL BRAIDED FABRICS.



Full Automatic NOPPEN & JACQUARD MACHINE

For High-Grade Sweaters, Jerseys, Etc. in latest plain and colored patterns.

Most durable, simplest construction! Easy to operate and adjust! Recognized as the Best in the market. One operator attends to 3 of these machines! Only reliable machine for above articles.

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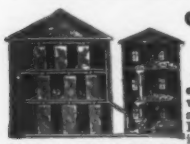

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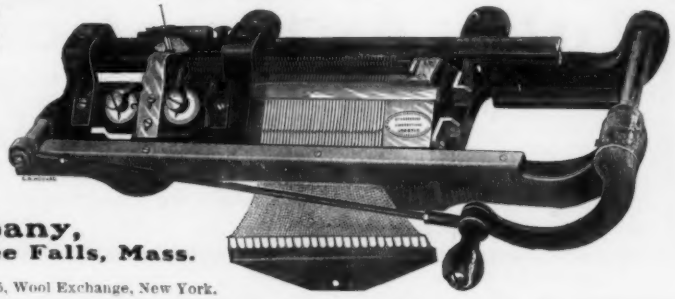

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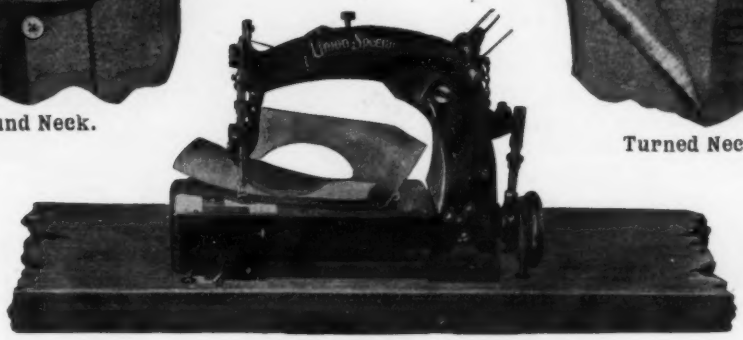

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FOR ALL KINDS AND GAUGES OF SEAMLESS HOSIERY.
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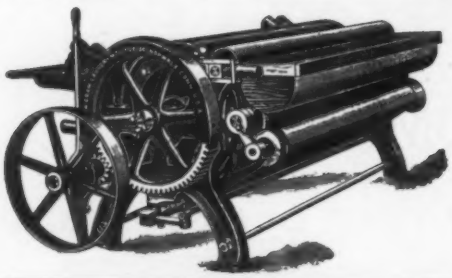

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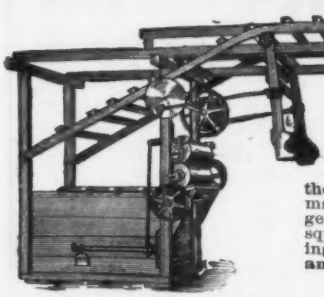

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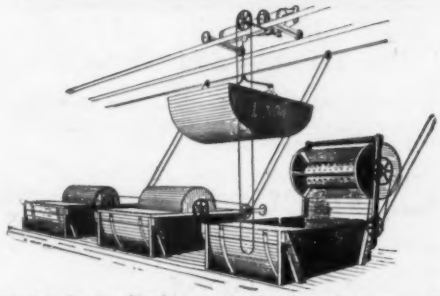

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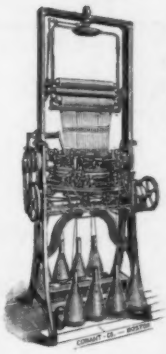

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Spring and Latch Knitting Needles,

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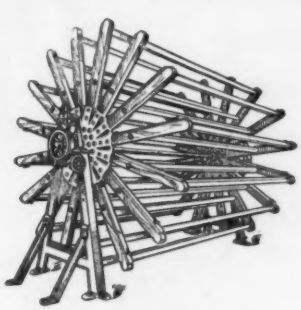

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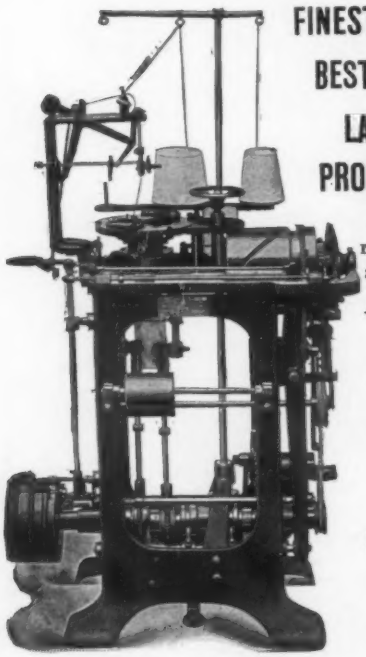

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Greatest Variety of Laces and Novelties.

All automatic.

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The greatest producing and most perfect

Spring Needle Knitting Machine in the World

Manufactured by
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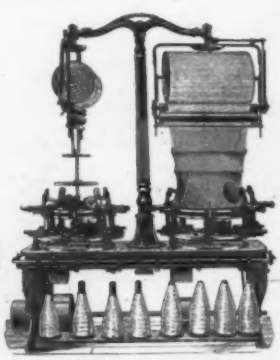

We are the oldest manufacturers of this kind of machines in the country.

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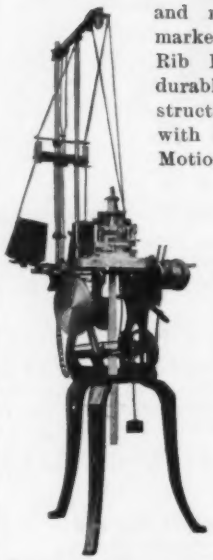

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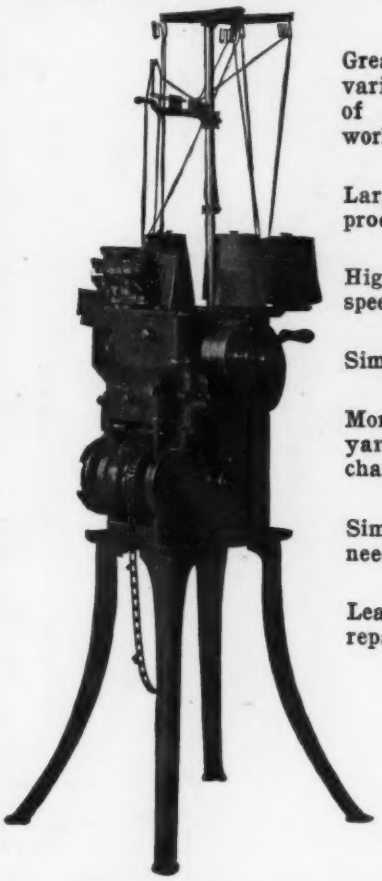

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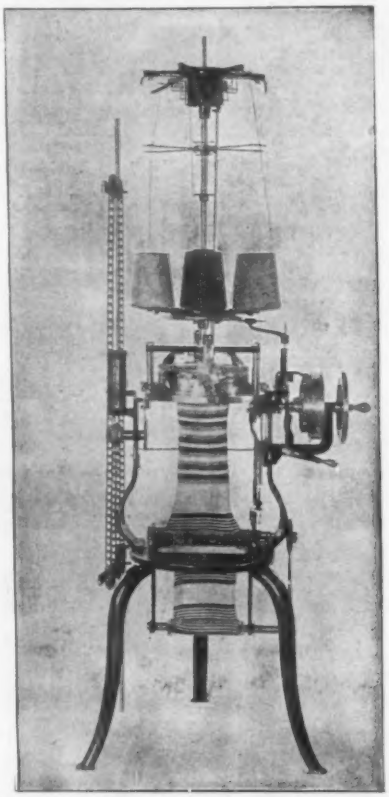

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GAS ENGINES for city or country
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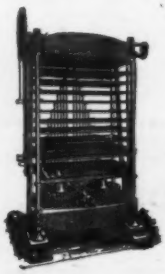

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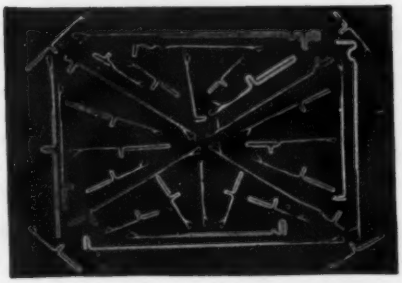

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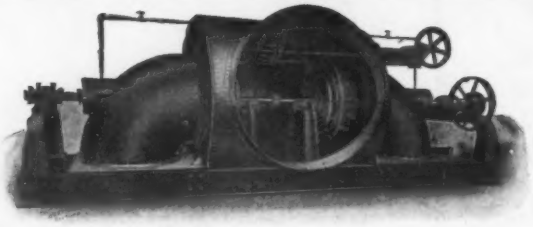

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WILL MEET ANY CONDITIONS.

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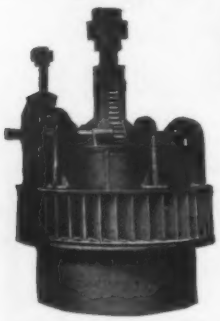

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For Cotton Stock, Wool Stock, Rags, Yarn, Cloth
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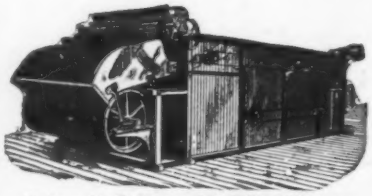
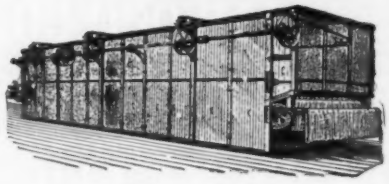


Automatic Cotton or Wool Stock Dryer.



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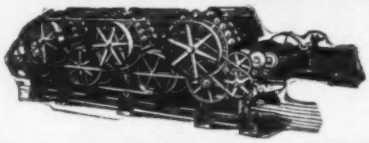
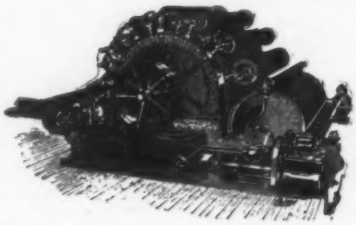
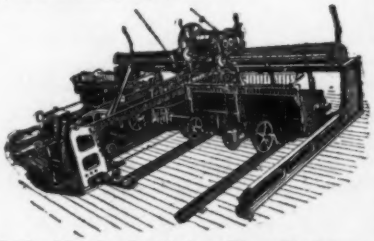


CARNETT MACHINES AND PICKERS

For reducing to Fibre Cotton and Wool Waste, Cloth Clippings, Etc.



WOOLEN MILL MACHINERY



Including Rag, Wool and Burr Pickers, Wool, Worsted and Shoddy Cards, Mules, Yarn Twisters, Warpers, Dressers, Spoolers, Etc.

Complete Equipment for Manufacturing Cotton Batting for All Purposes.

Special Carding and Spinning Machinery for manufacturing Yarn from such low grade stock as Mill Sweepings, Linters, Etc.

We reclothe or furnish new Metallic Toothed Cylinders and Rolls and relagg or furnish new Cylinders for any make of Rag Picker.

SMITH & FURBUSH MACHINE CO., Hancock and Somerset Streets, **PHILADELPHIA, PA., U. S. A.**

LB JL '07

And still they keep on taking them. First Jap-a-Lac, then Pond's Extract Soap,—then Diamond Dyes,—then Jap-a-Lac again,—then W. B. Corset,—the big, standard, well recognized and successful business houses. And now

Alabastine

pays $18,000.00

for a single advertisement, four pages, printed in full colors, in one issue of the

Butterick Trio

Look for it in the current issues of the DELINEATOR, DESIGNER and NEW IDEA WOMAN'S MAGAZINE, now on the news-stands.

"How Can The Man Who Pays Eighteen Thousand Dollars For This Single Advertisement Possibly Expect To Get His Money Back?"

He is getting the best advertising value that his money can buy.

FIRST,—The big ad stands more than a **chance** of attention. It **commands** attention. The Magnitude of it proves that it's worth reading and impresses it forever on the memory. If this advertiser had spread the same money over many small advertisements, in many small magazines, he would simply be "one of the crowd." And he would not make half, or even a third, so much impression.

SECOND,—Retailers KNOW the bigger power and surer results of these big advertisments. You don't have to explain or argue the matter with them. They have had experience, and they **know it** already. That fact alone adds immeasurably to the results of your advertising.

THIRD,—"Full-color" enables you to put into your advertisement any color you want. It gives life and vitality to any written argument. And if you are selling an article which has color for its main feature, the **best** part of your argument is the picture that shows your article in its **colors.**

Though it costs 1,800,000 cents, this big message goes to about 10,000,000 readers,—in more than 1,600,000 homes,—customers of practically every store in the United States that ought to be selling this article. They are the **kind** of customers whose patronage is valued by the retailer, and whose demand is heeded more readily. In fact, to "the Cream of Good Customers in America,"—whose patronage alone—(and irrespective of the clientele of any other magazine)—is sufficient in itself to assure the success of any worthy article,—when once they **know** its worthiness.

Figure for a minute and you will see it doesn't cost as much as it seems. Suppose this full-color business message had been printed and distributed to these customers by the advertiser himself. Or compare this with the cost in other magazines.

Look for this advertisement and read it carefully,—as a business man. For here is another business man who has called to his service **the largest, the strongest** and the **most efficient single power for business promotion in the world.**

If you are interested, either in advertisements of this size, or smaller ones, write to me. Advertisements not printed in full-color, but only in black, cost less—($100 per inch.) Whether your advertisement is large or small it reaches the same number of homes and the same number of readers. The big advertisement simply tells more of your story, and commands more attention.

THE BUTTERICK TRIO

THE DELINEATOR THE DESIGNER THE NEW IDEA WOMAN'S MAGAZINE

The Butterick Trio goes to more than 1,600,000 homes,—about Ten Millions of readers. Magazines that pass from hand to hand and from home to home, among **Women**, who buy **At Retail Stores**, for **Families**.

W. H. BLACK, Manager of Advertising, Butterick Building, New York.

F. H. RALSTEN, Western Advertising Manager, First National Bank Building, Chicago.

Foster Machine Company

WESTFIELD, MASS.

BUILDERS OF

CONE AND TUBE WINDERS

Both Close and Open wind.

Our Machines are in use in Cotton, Wool, Worsted, Silk and Linen Mills.

The FOSTER WIND CONE makes a Perfect Knitting Package.

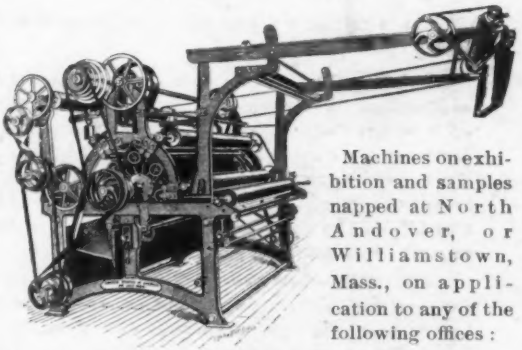
"Sirocco" Propeller Fans

At equal speeds have 50% greater volumetric capacity than other makes of Propeller Fans. For equal duties show 15% saving in power.

Sirocco Engineering Co.,
22 Thames Street, New York.

THE AMERICAN NAPPING MACHINE CO.

Own the principal patents on Napping Machines, representing the latest French, English and American Patents.



Machines on exhibition and samples napped at North Andover, or Williamstown, Mass., on application to any of the following offices:

Davis & Furber Machine Co.
Builders and Selling Agents, North Andover, Mass.
Geo. S. Harwood & Son, 53 State St., Boston
H. H. HEAP, Treasurer and General Manager
WILLIAMSTOWN, MASS.

Walworth Manufacturing Co.,

HIGH PRESSURE

VALVES AND FITTINGS

"Walmanco" Pipe Flanges,
"Never Stick" Blow-off Cocks, Mill Supplies.

GENERAL OFFICES:
132 FEDERAL STREET, BOSTON, MASS.
New York Office: Park Row Building.

JUL 13 1947